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REVIEWS OF BOOKS.

F. Bond's "Screens and Galleries in English Churches"; L. F. Day's "Enamelling: A Comparative Account of the Development and Practice of the Art"; A. G. H. Thatcher's "Scaffolding: A Treatise on the Design and Erection of Scaffolds, Gantries and Stagings"; R. W. Billings's "The Baronial and Ecclesiastical Antiquities of Scotland"; H. C. Dixon's "The Abbeys of Great Britain"; E. T. Green's "Towers and Spires: Their Design and Arrangement"; "Supplementary Papers of the American School of Classical Studies in Rome," Vol. II.

MAGAZINES AND REVIEWS.

Illustrations.

ADDITIONS, GOLDSMITHS' COLLEGE, NEW CROSS. MR. REGINALD BLOMFIELD, A.R.A., ARCHITECT.

DESIGN FOR THE PALACE OF PEACE, THE HAGUE. BY MR. A. J. CLIFFORD EWEN.

PHOTOGRAPHS FROM BRUGES. IN ILLUSTRATION OF THE VISIT OF THE ARCHITECTURAL ASSOCIATION.

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The Rebuilding of the Venice Campanile.—I.

NINE years have passed since the world was startled by the dramatic collapse of the campanile formerly standing in the square of St. Mark at Venice. The attention at first directed to the subject has long since subsided, and very little notice has been accorded to the work of rebuilding, which to-day is in a fairly advanced stage. Being concerned in the present article simply with the structural aspect of the operations, we need not refer to the history and construction of the fallen campanile except so far as may tend to explain or justify the nature of the works now in progress.

As stated in our article of July 19, 1902, the lower portion of the tower was probably commenced about the year 902, but the precise date when the foundations were made is not known with certainty. According to one account they consisted of or comprised the foundations of a tower built in the VIth century, as part of the fortifications then surrounding the city, and increased in height for use as a watch tower in the beginning of the VIIIth century after the foundations had been strengthened. The same account says that the campanile was built upon the base of the more ancient tower in the time of Pietro Tribuno Memmo, who filled the office of Doge from 888 to 912.

It may be doubted whether the original footings either formed or were incorporated in the foundations of the structure commenced about 902. As the result of careful investigations made by Cavaliere Boni in 1885, and recorded by him in the *Archivo Veneto*, it seems to be established that the base as well as the superstructure of the ancient watch tower must have been removed before the building of the campanile.

The foundations of that work consisted of three elements: (1) a series of 10-in. to 11-in. diameter piles formed of white poplar tree trunks, the piles being driven closely together to consolidate the ground over the entire area; (2) a raft-like structure on top of the piles built of oak logs roughly squared and placed in two tiers at right angles to each other; and (3) foundation walls comprising several courses of stone blocks, the bottom course projecting about 12 in. on every side beyond the oak platform.

Examination in 1904 of the old foundations, which were about 48 ft. square, showed that the space between the four foundation walls was filled with loose stones about 6 in. to 9 in. across, no trace of mortar being observed. The object of the original designer was evidently to transmit the superimposed load on lines immediately above the outer piles, instead of making a solid block of masonry under heavy compression along the edges and carrying comparatively little weight in the central portion.

The excavation made for the foundations passed through alluvial soil and sandy clay to a bed of fine stiff clay about 13 ft. below present surface level and probably 10 ft. or thereabouts below the corresponding level existing a thousand years ago. The stratum of clay is little more than 6 ft. thick, and below it comes a layer of sand of nearly equal depth (see Fig. 1). Consequently it will be understood that the weight originally imposed on the foundations and the successive additions made in the XIIth and XVIth centuries would naturally cause more or less serious subsidences, such in fact as are generally evident in Venetian buildings.

Originally manifested by a slight inclination of the campanile on a line passing from north to south and increasing with augmentations of load, the settlement gradually diminished as the earth became compressed, and for several centuries has probably been very small and fairly uniform beneath the entire base.

Taking everything into account there is not much fault to be found with the behaviour of the substructure, although of course it could be better designed in the present day, notably by increase of area and by greater depth, giving a direct bearing upon the firm material underlying the bed of sand we have mentioned.

Shortly after the collapse in 1902 there was some talk of an international fund for rebuilding the campanile, but this was not an acceptable idea to the Venetians, by whose municipal council a commission was promptly appointed to undertake the work of reconstruction.

The commission consisted of the well-known architect, Signor Moretti, as president; Signor Donghi, the city engineer; Signor Lavvezari, civil engineer; Signor Manfredi, formerly director of the School of Fine Arts; and Signor Orio, civil engineer.

Some preliminary discussion arose as to the position for the new campanile. Suggestions were made to the effect that it ought to be situated in another part of St. Mark's-square, or even outside that space, in order to leave the Ducal Palace perfectly open to view. These, however, were negatived by the municipal council, who, believing that the pleasing contrasts presented by the architecture of St. Mark's-square had resulted in the past from the somewhat fortuitous collection of buildings designed at various times in different styles, thought it best to preserve as far as possible the time-honoured appearance of the place. For a similar reason, we presume, they rejected the idea which we expressed soon

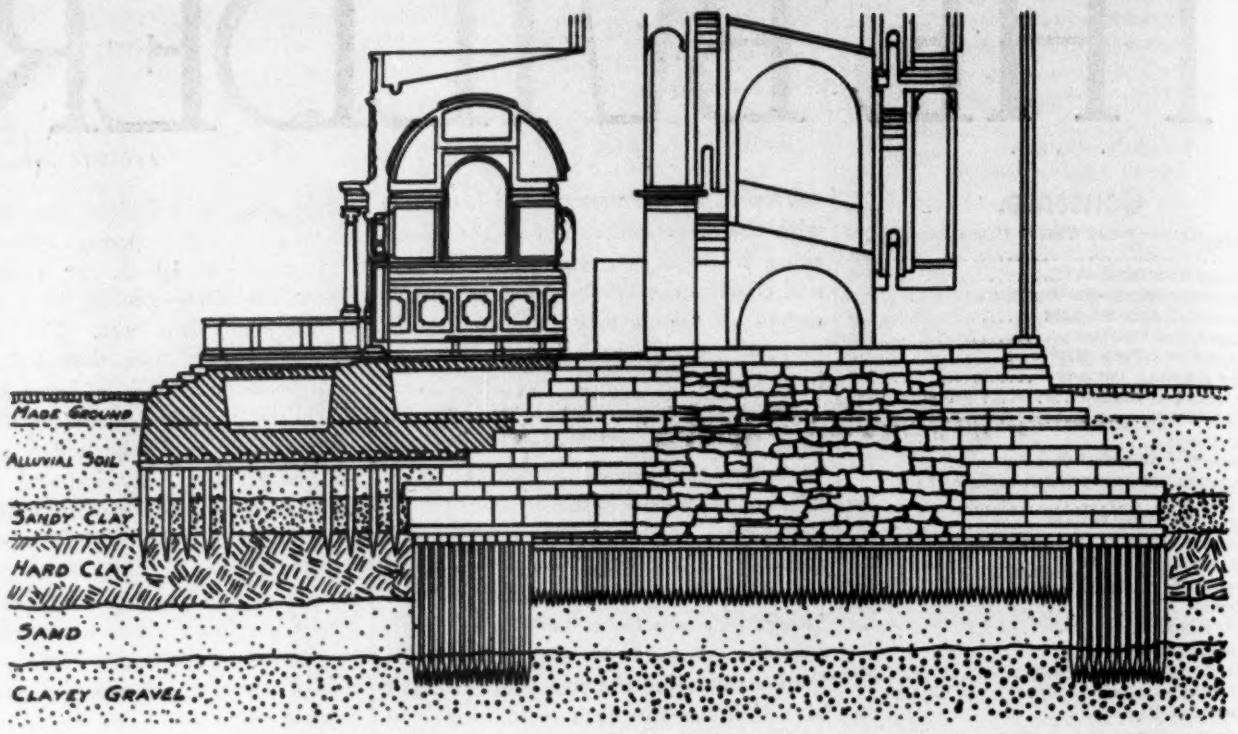


Fig. 1. Section of Foundation.

after the collapse, that the proper course would be to erect a tower more correctly proportioned while preserving the height, bulk, and general outline of the former structure.

Thus in December, 1902, the council decided that the campanile should be reconstructed *dov'era e com'era*—where and as it was. While disagreeing with the second part of this instruction we are glad to recognise the wisdom of the municipal authorities in giving the commission full powers to utilise any recent improvements in constructional methods for the purpose of securing maximum strength and solidity for the new campanile.

After the site had been cleared from *débris* and the foundations were exposed, various boreholes were made, by whose aid it was ascertained that the substructure had acquired a condition of stable equilibrium and apparently was quite fit for supporting the weight of the new tower. Nevertheless, recognising the possibility that the shock of the falling masonry might have caused some undetected injury, and desiring to minimise the extent of any future subsidence, the commission decided to increase the bearing surface by building new footings to the width of from 18 ft. to 21 ft. around the old foundations.

Fig. 1 is a section showing the foundations of the new campanile and loggietta and the various strata encountered near the surface of the ground.

The old foundations and piles of the tower are there seen surrounded by the new masonry and the longer piles driven down to the bed of gravel so as to be independent of the overlying sand. The new piles, measuring about 13 ft. long by 8½ in. diameter, are of larch, a variety of timber which has been very largely used in Venice for foundation work, and in numerous cases has been found to be in excellent condition after centuries of service. Another reason stated for the selection of larch was that owing to the regularity and straightness of the trunks a larger number of piles could be driven in the predetermined area than if timber such as oak had been employed. The last argument may very likely not appeal to British architects having ready means of obtaining superior qualities of timber from all parts of the world, but doubtless it appeared important to the Venetian Commission, who desired to make use of local materials as far as possible.

In view of their power to make full employment of modern improvements we think the commission would have been well advised if they had decided to replace the foundations entirely, adopting long piles of reinforced concrete instead of short timber members, and thereby securing far greater bearing power and a more certain assurance of stability and freedom from possible decay.

Altogether some 4,000 new piles were driven around the old footings and, after their heads had been trimmed off level, the interstices were filled in with cement mortar, and thus a basis was formed for the timber platform built as an extension of the ancient grillage. The new platform consists of oak planks in two tiers, the planks first laid being parallel to the faces of the old foundations, and those above at right angles to them. Cement grout injected into the joints serves to consolidate and bind together the planks.

The walls of the old foundation were built of stone obtained from the quarries of Istria, on the Austrian side of the Gulf of Venice, and as stones taken from different parts of the masonry were found to be in good condition, it was decided to use the same quality of material for the additional foundation work.

Examination also showed that the interior mortar was in a satisfactory state, but that the mortar in the outer joints had suffered decomposition to a considerable extent.

Consequently, while relying generally upon the old masonry, the commission thought it necessary to rebuild the outer faces of the walls in cement mortar. Moreover, with the object of securing a satisfactory bond between the old and new masonry, portions of the old walls were removed after the work above had been suitably underpinned. The openings thus made were filled with new masonry in the form of long header blocks penetrating for the distance of about 7 ft. into the interior and laid in cement mortar.

The general character of the foundation work is sufficiently illustrated by Fig. 1. It was executed during the years 1904 and 1905 at the cost of nearly 10,350*l*. One very satisfactory effect of the increased foundation area will be a reduction of more than 50 per cent. in the maximum pressure on the earth.

Before passing away from the foundations, we may direct attention to the fact that the new tower stands upon a base rising to the extent of five courses of masonry above the surface level of St. Mark's-square.

This feature of the design is really no innovation, as measurements taken after the collapse made clear the fact that five courses of the base originally projected above the ground, whose level to-day in the square of St. Mark is known to be some 20 in. above the level existing at the end of the XVth century.

Therefore in providing the shaft with a base higher than that familiar to modern generations, the commission were actuated by the desire to reproduce the appearance at first presented by the visible portion of its foundation, and at the same time to proportion the shaft and its base so as to give the idea of security which had been to some extent taken away from the old campanile by successive highway authorities.

(To be continued.)

INSTITUTE PREMISES, EPPING.—New premises have been built for the Epping Literary and Mechanics' Institute. Mr. T. G. Hart was the architect, Messrs. Whiffin & Sons being the contractors.

NOTES.

Architecture and Drawing.

PROFESSOR PITE made some very pregnant remarks at the second day's sitting of the International Art Congress. "It was essential," he said, "that the teaching of drawing in the building trades should mean this—that they were not teaching drawing on paper with pencil and india-rubber, but were teaching drawing on stone with steel tools; with woodwork and joints. . . . For some 500 years the building arts of England grew up without the assistance of English blacklead and American india-rubber." The mediæval architect-builders who were responsible for the cathedrals and churches of Europe would have probably cut rather a poor figure as draughtsmen in the offices of to-day; little or no "blacklead and india-rubber" was expended in the practice of their art. The designer was engaged in the actual carrying out of his works, and probably occupied much the same position with respect to his fellow-workmen as the modern foreman. Ornament and construction grew together, improved construction necessitated a new development of ornament; architecture, in fact, lived. With the Renaissance the whole system of necessity underwent a change; the ornament being imported from abroad, the architect-builder ceased to exist. It took one man's whole time to set the building out on paper; design became no longer a matter of craft-instinct, a thing handed down from master to apprentice, "on the job," so to speak, but an exotic, pursued largely for its literary associations, a thing only within the province of the cultured man. The movement which recreated literature killed architecture, regarded as an art. For hackneyed as the definition is, architecture is ornamented construction, not construction masked by ornament. The standard of architectural drawing has gone up by leaps and bounds within the last fifty years; our historic ornament is more faithfully and learnedly reproduced, but with what ultimate good to the cause of architecture, when it is only employed for the hiding of the steelwork which is the essence of the modern business building? Fine drawing has not taught us to evolve any mode of ornament which acknowledges the existence of the steelwork behind, but only to perpetrate even vaster shams than were committed in the days of stucco. Was the world's stock of ornament exhausted at the Renaissance? The way out of the old vicious circle of imitation lies through a closer union of architect and builder, of theory and practice.

Architecture in French Schools.

THE French Government have commissioned M. Jambon, who executed a great deal of the decorative modelling at the Opera House, to make a number of models giving exact representations of the interiors and exteriors of the principal historic chateaux of France. These models are to be sent to the Primary schools, accompanied by detailed explanations which will enable the teachers to instruct their pupils, by the help of the models, in the characteristics of some of the most interesting and important of the national buildings of France: an example that might well be followed in our own schools. But we suppose the English Government would say they could not afford to waste money on any such scheme for the architectural instruction of the young.

The County Council Dwellings.

WE believe the general experience of speculative builders, building associations, and private owners is that house property of low rental value yields ample return for capital invested, and is far more remunerative than property of superior grades. That being admitted, the public are entitled to ask why is it that the London County Council have to show so unsatisfactory a report of their operations under the Housing Act? From the recently published annual report it appears that the net amount contributed from the rates and tramways is more than 50,000*l.* from the opening of the first block in 1894 to March, 1908, while the unfortunate brickfields at Norbury are responsible for the net loss of more than 6,340*l.* to the same date. If the dwellings built by the Council were occupied entirely or for the greater part by the population cleared from insanitary areas, we should not grudge the burden imposed on the rates. But it is a well-known fact that the labouring classes do not like the relatively expensive dwellings built for them by public bodies, and even the advantage of electric light—for which some of the County Council estates are exclusively fitted—does not appeal to the people who can only afford gas or the cheap and dangerous paraffin lamp. There is no sense in building houses at the cost of the ratepayers to be occupied by clerks and superior mechanics, while speculators erect the cottages inhabited by displaced labourers and make a good profit.

Dover Harbour.

THE commencement of an important series of works for the further improvement of Dover Harbour for passenger and mercantile traffic is marked by the completion of the plans relating to the widening of the Admiralty Pier between the shore end and the War Office battery. The widening will add a triangular area to the existing pier, making the maximum width of that structure nearly 400 ft., and providing ample accommodation for a new marine station of larger size than the Charing Cross terminus of the South Eastern and Chatham Railway. The new station will be sufficiently to the east of the Admiralty Pier to avoid the waves which break over the parapet in south-westerly gales, and as the station will be roofed over and otherwise protected against the weather, passengers embarking and disembarking will be able to change from train to steamer and *vice versâ* without the least chance of discomfort. The works to which we here refer form part of a more comprehensive scheme prepared for the Dover Harbour Board by Mr. A. T. Walmisley, the harbour engineer. We understand that the site for the new station has been leased to the railway company, and that in consequence of this arrangement the station buildings will be erected from the plans of Mr. Tempest, the chief engineer to the South Eastern and Chatham Railway.

Recent Gas Reports.

THE half-yearly reports of the three metropolitan gas companies which have just been issued show that although each company has gained a large number of new consumers, each has sold less gas than in the corresponding period of the previous year. In no case does the decrease in the quantity sold amount to 2 per cent., but in view of the increased number of consumers it is evident that the economy effected by the incandescent gas burner, and more especially by the inverted form of the burner, has influenced the average gas account to a material extent. In the last ten years the number of gas consumers in the South Metropolitan district has increased 94 per cent., while the gas consumption has increased only 37 per cent. This is due not only to the use of incandescent burners in place of flat-flame burners, but also to the fact that most of the new consumers live in small flats and tenement buildings and use prepayment meters. Abnormally high charges for coal, general depression in the trades and industries, and keen competition with other illuminants have not yet affected the prosperity of the gas industry to any material extent. The closing of factories and the poverty of those who become unemployed tend to reduce the demand for gas, but the industry has more opportunity of adjusting itself to meet adverse circumstances than most other business undertakings. The returns from the suburban districts such as Wandsworth, Brentford, Tottenham, and West Ham continue to show large increases in the quantities of gas sold as well as in the number of gas consumers, and most of the provincial towns also have an increasing gas consumption.

A Picture of Covent Garden in the XVIIIth Century.

MR. BUCK, of Baker-street, picture dealer, has recently acquired a large oil painting which gives an uncommon presentment of Covent-garden as it appeared more than 150 years ago. The picture, we are informed, is by Samuel Scott, who died in 1772. The view is taken from the east end, and shows the northern or Great Piazza, with Tavistock-row along the south side; in the background are King and Henrietta streets and St. Paul's Church. In the market square are numerous groups of figures, the Corinthian pillar with its sun-dials and gilded sphere, and the line of booths, stalls, and coffee-stalls ranged in front of Tavistock-row. The dial-column was set up in December, 1668, and remained *in situ* until June, 1790, when John Kemble obtained the ball for the garden of his house (since pulled down), No. 13, Caroline-street, Bedford-square. Tavistock-row was built after the demolition in 1704 of Bedford House; the last surviving house, No. 13, was dismantled in December, 1885. It stood upon the site of the east garden of the house which either John Russell, first Earl of Bedford, or his son, Francis, built upon the conventual home farm or "frère pye" garden of St. Peter's Convent at Westminster, which was granted, together

with the Elms Close or Seven Acres (Long Acre), to him by the Crown in May, 1552, upon Protector Somerset's attainder. The picture is noteworthy inasmuch as it depicts the original elevation, since much changed, of Inigo Jones's Great Piazza, with attics having dormer windows in the tiled and projecting roofs above the second floor. The church is seen with its original bell-turret; on either side are the two rustic gateways of brick and plaster, opening into the graveyard, which T. Hardwick rebuilt of stone after the fire on September 17, 1795. With the picture may be compared the painting of about 1750, attributed to Canaletto, which was included in the sale at Christie's just twenty years ago of Lord Hardwicke's collection, and the Duke of Bedford's picture, inscribed "B. Nebot in 1735," which formerly belonged to Charles Richardson, of Richardson's coffee-house in Little Piazza, and is ascribed by some to Hogarth.

Fire in the Old Bailey.

THE fire which occurred last week at No. 48, Old Bailey, again calls attention to the folly of the non-adoption of some system of automatic fire alarm. At the inquiry held by Dr. Waldo, J.P., acting in pursuance of the powers conferred by the City of London Fire Inquests Act, 1888, the opinion was expressed by the Fire Brigade that the fire had been smouldering undiscovered for two or three days. Had there been a successful automatic fire alarm on the premises, the Fire Brigade would have been warned earlier, and in all probability the outbreak would have been confined to the room in which it started. As it was, the premises were almost completely gutted. In his evidence Second Officer Gamble remarked, "It was important that they should get as early calls as possible when fire broke out, and there were many automatic alarms in the field that served that purpose." It was further stated that the construction of the building was faulty, the girders being unprotected, and the coping stone unnecessarily heavy. No. 49A was also nearly burnt out; the premises of Messrs. Cassell & Co., printers and publishers, in Fleet-lane narrowly escaped, considerable damage being done by fire and breakage. At the inquiry held into the Barbican conflagration of 1902 the jury recommended that the fire authority (the London County Council) should offer a reward for the best automatic fire alarm, with the view of its adoption. No notice, however, was taken of the suggestion, with the result that we are still faced, as in the present instance, with much avoidable loss of property, and often of life.

HOSPITAL, GREAT TORRINGTON.—A new cottage hospital is being built at Great Torrington. The building will cost 1,190*l.*, and has been designed by Mr. W. C. Medland, the contractors being Messrs. Heard & Son.

WESLEYAN SUNDAY-SCHOOL, THIRSK.—A new Sunday-school is being built in connexion with the Wesley Chapel, Thirsk. Mr. T. Stokes, architect, Thirsk, has prepared the plans, and the following tenders have been accepted:—Bricklaying, Mr. J. R. Manfield; joiner's work, Mr. J. D. Ruecroft; slating, Messrs. Baynes & Beck; plumbing, executors of Mr. Best; painting, Mr. J. Bickers; heating, Messrs. Blakeborough & Rhodes, Stockton. The total cost is estimated at 1,700*l.*, and about 300*l.* will be required for furnishing.

THE WASTING OF IRON.—VII.

By THOMAS HOLGATE, M.INST.C.E., F.C.S.

PASSIVITY.

IT is well known that one means of protection against rust is an adherent film of magnetic oxide, which may be produced by the action of steam on heated iron. Other conditions that provide immunity are not so obvious, and many investigators into this "passivity" have recognised that if this could be clearly traced the reverse condition of activity would not be far to seek.

Professor F. Haber and Mr. Goldschmidt, in their investigations of the electrolysis of pipes, found that an iron anode is active in a very dilute solution of sodium carbonate and passive in concentrated solution, whilst in a twentieth normal solution the same anode may be partially active and partially passive. The conditions under which this state of things can exist are not easily maintained, and, as a rule, the active or the passive state soon gains the upper hand, the whole anode passing into the one or other condition. An iron anode which is passive in a solution of sodium or calcium hydroxide is at once rendered active by the addition of a chloride. They take the view that a skin of oxide is formed which is a metallic conductor, and show that the oxide Fe_3O_{11} possesses metallic conductivity. The loss of passivity which a passive anode undergoes when left without current is attributed to the skin of oxide becoming porous or discontinuous. The behaviour of a metal covered by a porous skin of a less readily attacked substance was studied on iron coated with copper and on thin platinum or silver-foil coated on one side with zinc. In the first case, as the thickness of the copper deposit is increased the electrical behaviour of the coated iron changes gradually from that of iron to that of copper. In the second case a drop of a solution of zinc sulphate is placed on the uncoated side of the foil, and the potential difference between the metal and the solution measured. It is found to approach more nearly to that between zinc and a solution of zinc sulphate as the porosity of the foil increases. The skin of oxide supposed to exist on the surface of a passive iron anode differs from the porous metallic film in the fact that its imperfections are immediately remedied by the oxidation of the metal. Capillary forces and reduction of the oxide by the metal with which it is in contact are suggested as reasons for the formation of the defects in the skin, which is thus supposed to be continually undergoing destruction and regeneration. The experiments of Messrs. Gordon and Clark in 1906 are corroborative of the above view. In a Wheatstone bridge, using alternating current and a telephone, the polarisation of iron electrodes can usually be balanced by means of a condenser and a resistance in parallel with it. In dilute nitric acid, and (after cathodic polarisation) in ferrous sulphate and chloride solutions iron is non-polarisable. In concentrated nitric acid the polarisation of large electrodes can be balanced by the condenser alone. These facts are interpreted to mean that when iron is polarisable it is coated with a film of oxide possessing a certain conductivity. The capacity of the film is much the same whether the iron is active or passive, but its conductivity is much smaller when the iron is passive. The behaviour of large iron electrodes in concentrated nitric acid is due to the small conductivity of the film of oxide, the small currents which pass through it do not affect the telephone; with small electrodes the greater density of the current used in the measurements increases the conductivity of the film.

In the *Journal of the Society of Chemical Industry* (pp. 899-917, 1907) is a valuable paper on "The Passifying, Passivity, and Actifying of Iron," by Henry L. Heathcote, B.Sc., of Rudge-Whitworth, Ltd., Coventry. Most of the experiments were made in th Physical Chemistry Institute, Leipzig, under Professor Ostwald, the remainder at Birmingham University; and the following is a brief statement of these.

Iron is passive when no action visible to the naked eye occurs in dipping the metal into nitric acid of specific gravity 1·2 at 16° C. Iron is in all cases rendered passive by nitric acid of specific gravity 1·25 or 1·4, but only after some of the metal is dissolved. Electrolytically-deposited iron (on copper) is rendered passive by 1·4 specific gravity acid, but becomes active again after one or two minutes in acid of specific gravity 1·2. Yellow, purple, or blue annealed iron is rendered passive by acid of specific gravity 1·3, although no visible action takes place. In concentrated nitric acid iron retains its passive state for a long time, but at the same time gradual solution of the metal takes place. Iron rendered passive by acid of specific gravity 1·4 becomes active after about twenty hours' immersion in acid of specific gravity 1·2, but the change takes place much more rapidly if the acid be kept in motion; for instance, if a stream of 1·2 specific gravity acid be allowed to impinge on a passive iron rod immersed in acid of the same strength, the metal becomes active after one minute. Exactly the opposite is the case, however, when acid of specific gravity 1·275 is used. On immersion in other liquids the passive state persists for very different periods; in concentrated potassium nitrate solution, a few seconds; in twice normal caustic potash, two to three minutes; and in saturated solutions of potassium bichromate or ferric alum, several days. Iron can retain its passivity for some time if kept in vacuo, after completely removing the acid. Passivity can be produced also by the electric current, and Mr. Heathcote regards it in all cases as electrolytic, saying that, when no external current is employed, electricity is generated between one part of the surface and another. When iron is immersed in a solution, some of the metal passes thereto forming ferrous ions. The solution pressure of the iron will not, however, be the same at all points of the surface, but will be greater at the ridges and points than at the hollows of the surface. Thus arise local currents, and if the solution will act as a depolariser at the cathode of these local circuits, the current may persist until passivity at the anodes of the local circuits is effected. The phenomena of passivity are explained by Mr. Heathcote on the assumption of the formation of a layer of magnetic oxide, Fe_3O_4, almost of the same percentage composition as the one suggested by Haber. This view is borne out by the E.M.F. measurements of Haber and Maitland. The hydroxyl ion can be liberated even from solutions which contain no oxygenated anions, and the results obtained go to show that it is the hydroxyl ions which effect passivity, and that this state is due to the formation of a solid phase. E. Muller and F. Spitzer (1907) put forward results confirmatory of the view that the passivity is due to the formation of a film of oxide.

Dr. A. S. Cushman, of the United States of America Office of Public Roads (1907), says the passivity produced by immersion in solutions of chromic acid, chromates, or bichromates is probably due not to an oxide film, as is usually believed, but to a film of oxygen, since this property is destroyed by heating the metal to 100° C. for some hours, or by keeping it in a vacuum. He recommends the use of potassium bichromate as a boiler protective, and of slightly soluble chromates as priming coats for iron and steel surfaces, before the application of paint. His experiments he regards as supporting the electrolytic theory of corrosion.

Martin Mugdan (1903) and Muller and Konigsberger (1907) have published useful information upon passivity, and for these, and the views of many others, reference to the excellent bibliography subjoined to Mr. Heathcote's paper is recommended.

SUMMARY.

If the lessons of experience and the teachings of authorities herein given may be regarded as a sufficient basis for a generalisation, it would appear that the wasting of iron proceeds as follows:—

(1) Iron is dissolved by water or other medium in proportion to the hydrogen ions contained, and to the strength of the electric current to which it is subjected, the action being accelerated by changes of temperature.

(2) That dissolved iron will be oxidised in proportion as oxygen can gain access thereto.

(3) That the rapidity of action of (1) and (2) is affected by the state of the metallic surface, physically, and as to the occluded gases.

It follows from these leading ideas that prevention of wasting will be secured by keeping iron or steel structures as free from weak or strong acids and oxygen as possible. These measures of preservation are practised with more or less thoroughness at present, and it is now evident that it is of equal, or perhaps greater, importance in some cases that the electrical factors should be provided for. Manifestly these cannot wisely be disregarded in buildings formed of structural steel, especially where the steel goes below ground, or other region where stray currents of electricity may work mischief.

SCIENCE AT THE FRANCO-BRITISH EXHIBITION.

NEAR the Wood-lane entrance of the Exhibition at Shepherd's Bush the visitor in search of instruction will find a large hall devoted to various more or less abstract branches of science, and consequently not offering the same attraction for the crowds surrounding and pervading more popular sections.

The department, organised by a committee of many eminent scientists, under the presidency of Sir Norman Lockyer, illustrates work being done to-day, and instruments employed during the present and the two preceding centuries.

The subjects to which the exhibits refer are: Mathematics, including arithmetic, geometry, and mensuration; molecular physics and sound; visible and invisible radiations; heat, magnetism and electricity, chemistry, mineralogy and crystallography, metallography, biology, anthropology, geography, geology, oceanography, meteorology, astronomy, and geodesy. This is a fairly comprehensive list, but as several branches of work are quite outside our province, we only refer in the present notes to such exhibits as bear directly or indirectly upon architectural and engineering practice.

Opposite the entrance-door a glass case belonging to the biological section contains a model of the first medical air lock on the old Hudson Tunnel, New York. The apparatus represented was designed by Mr. E. W. Moir for the treatment of caisson disease. It comprises an outer and an inner chamber, the latter having bunks for patients, and electric radiators for warming the air, while valves are provided for regulating the pressure in both chambers as required by the medical attendants. The exhibit belongs to civil engineering quite as much as to biology, and demonstrates the intimate connexion that may exist between branches of science commonly regarded as being entirely distinct one from the other.

Bearing towards the right, the visitor finds a valuable collection of instruments and maps illustrating the history of cartography in different parts of the British Empire. The chief exhibitors are the Ordnance Survey of the United Kingdom, the War Office, the Survey of India, the Department of Militia and Defence of Canada, the Gold Coast Colony, and the Royal Geographical Society.

Among the various instruments shown by the Ordnance Survey is one of the large theodolites made by Ramsden in 1798 for the main triangulation of Great Britain and Ireland. The circle of this instrument measures 36 in. across, the focal length of the telescope is 36 in., the magnifying power 54, and the total weight is about 200 lb., exclusive of the stand. Other instruments employed in the survey are also exhibited, the more noteworthy being two of the 12-in. Everest the odolitesfor secondary triangulation, a 7-in. Everest theodolite for tertiary triangulation, and a 12-in. spirit level for initial or primary levels.

Messrs. Troughton & Simms, by whom one of the four large theodolites for the Ordnance Survey was made, have lent a mural circle built by them in the early part of last century. This is a very bulky relic, comprising a divided circle for attachment to any vertical wall having its plane in the plane of the meridian, a telescope, and reading microscopes. The mural circle superseded the mural quadrant, and, in turn, has been superseded by the transit circle for the measurement of horizontal angles. The same firm exhibit an example of their theodolite with micrometer microscopes by which readings can be obtained in single seconds of the arc. Since the introduction of the micrometer reader it has been found that no advantage is gained by using instruments with a circle of more than 12 in. diameter. Of course the larger the circle the greater is the possibility of fine subdivision, and a very high degree of accuracy could be obtained by the aid of a large circle and the micrometer in combination. But an objection to large instruments, apart from transport difficulties, is that important errors result from the expansion and contraction due to heat and cold, especially during the prevalence of wind. In the Ordnance Survey it was necessary to protect each of the large theodolites by a tent provided with a small opening, through which observations were taken.

Messrs. Casella show a small but interesting collection of instruments and appliances, one of these being a dip-circle—otherwise termed a dipping compass—useful for measuring the dip or inclination of the magnetic needle, and another a neat form of artificial horizon for the correction of altitudes observed with the sextant.

An instructive feature of the War Office exhibit is represented by a demonstration of the manner in which the plane table is employed for service surveys. A great advantage of this instrument is that it can be manipulated by any intelligent person after a little practice, but as all the work must be directly plotted in the field the prismatic compass and clinometer are certainly preferable in rainy climates, as these permit the plotting of observations under cover. Close by, Messrs. Cary Porter show a 12-in. Reeves' folding-pattern telescopic alidade, a refinement of the sighted rule forming an essential part of the plane table equipment.

Several departments of the National Physical Laboratory are well represented by stands distributed about the hall. On one of these is a model of the apparatus used for the investigation of wind pressures on plates and structures and near by is a collection of British Standard screw gauges, templates for rolled steel, surface plates, and a Whitworth measuring machine, by which readings can be made in millionths of an inch. Elsewhere are an example of the apparatus employed for the photomicrographic examination of metals, and numerous instruments employed in research work and tests of various kinds. The exhibits serve to illustrate the main branches of work conducted by the laboratory, such as scientific research alone or in connexion with the determination of physical constants, the establishment of standards, and the testing of instruments and materials.

In the heat section the visitor will find a model of the apparatus employed by Joule in his classical experiments for determination of the mechanical equivalent of heat. Three forms of apparatus were used in this investigation. The first, represented by the model at Shepherd's Bush, consisted of a cylindrical water vessel with four fixed vanes and fitted with a rotary shaft having eight blades. The friction of the water, prevented from rotating in mass by the fixed vanes, caused a rise of temperature which, after correction for work expended outside the water, gave 772·69 foot-pounds as the equivalent of one thermal unit, that is, the amount of heat required to raise one pound of water through 1° Fahr. The other appliances employed by Joule gave results varying between 772 foot-pounds and 776 foot-pounds.

Instruments shown by the Imperial College of Science and Technology comprise thermometers, barometers, and calorimeters in considerable variety, and others lent by the Cambridge Scientific Instrument Company include electrical thermometers, pyrometers, and other electrical appliances, and an example of the Callender apparatus for determining the mechanical equivalent of heat.

Magnetism and electricity are covered in part by some of the exhibits already mentioned, but there are many other stands in the same section which deserve close inspection. The early history of modern electrical science is illustrated by the apparatus of Cavendish, Kerr, Joule, Wheatstone, and others. A large glass case containing a series of electric incandescent lamps in chronological order from the original lamp invented by Sir Joseph Swan to the most modern type. Electric measuring instruments are similarly represented by the early and more recent types introduced by Lord Kelvin and others.

An object-lesson on the mischief often caused by careless workmen is provided by a piece of telegraph cable cut from the line between London and Penzance. This specimen exhibits a fault due to the carelessness of a workman in trying to clear a drain during floods in the vicinty of Reading. It is stated that the removal of the fault necessitated an expenditure of 100*l*.

Before leaving electrical subjects we should mention the 1,000-ampere furnace shown by Messrs. Marryat & Place. This apparatus, capable of obtaining a temperature of 7,232° Fahr. and of reducing all known substances to the gaseous state, serves to bring home to the mind the wonderful power placed at the disposal of man by modern electrical science.

Meteorology interests architects mainly in the department covered by atmospheric electricity and engineers in connexion with rainfall, many architects being also concerned with the latter branch. The instruments and photographs relating to lightning and damage caused thereby deserve examination and so also do the excellent collections of apparatus, charts, and drawings presented by the Royal Observatory, the Meterological Office, and the British Rainfall Association.

Three other kindred sections in the hall are those of geology, mineralogy, and metallurgy, each of these being well represented. The Geological Survey of Great Britain show maps, photographs, specimens of minerals, and a case illustrating the natural history of the coal measure plants; the Geological Survey of Ireland, the Geological Society, and the British Association contributing similar exhibits. A practical exhibit by the Geological Survey of Ireland is an augur for sampling subsoils, a tool which may be found of service to many of our readers.

British mineralogy is fairly represented by various specimens, including some of rare minerals collected by Mr. A. Russell and Mr. F. N. A. Fleischmann. Metallurgy has received attention from the National Physical Laboratory, the University of Sheffield, the Sir John Cass Technical Institute, Mr. J. E. Stead, and others.

Finally we may commend to those interested in coast protection works the excellent photographic studies of wave phenomena lent by Dr. Vaughan Cornish.

Taken as a whole, the science section of the

Exhibition must be regarded as a distinct success, and we feel sure that most of those who make a conscientious examination of the objects there displayed will come away with the impression that a course of reading on several of the subjects illustrated would be by no means inappropriate.

INTERNATIONAL ART CONGRESS.*

Art Teaching in Relation to Industrial Design.

MR. LEWIS F. DAY read a paper on this subject. In the course of his remarks he said he was not going very minutely into the question of what the schools of art have done for industry, but rather he proposed to suggest what they ought to do, leaving it to them to say how far they were doing it, or in what way they might do it better. It was a pleasure to him to begin by saying that he found there was a deal more being done than he thought there was. Furthermore he had interviewed various manufacturers who had artists in their employ, with a view of ascertaining what schools of art did for them. There was no doubt that (whether they acknowledged it or not) they owed a great deal to the schools of art—the average artistic accomplishment of the young person who wanted employment more or less artistic had gone up in the last half century hundreds per cent. How much of their talent was available for industry was another question. He thought it might be, and ought to be, more available than it is.

Proceeding, he said: "If employers of artistic labour do not get all the help they might derive from schools of art, it is partly their own fault, no doubt. But it is partly the result of the very point of proficiency to which students in the schools attain, a proficiency rather in the pictorial than in the industrial direction, and one which disinclines them very often to take up the industrial work that wants doing.

It is only according to nature, and to artistic nature in particular, to desire to work untrammelled by conditions to which industry is, and always must be, subject. But it is a desire that leads, unhappily, except in the rare cases of exceptional artistic gifts, to unemployment—and it is not with a view to the multiplication of painters out of work that schools of art are paid for out of public money. . . . Is there not a tendency in schools to relegate applied design to a lower level than—well, it ought to take in schools established with a view to the encouragement of design? Of late years there have been two developments of teaching on lines diverging from fine art:

(1) In the technical direction.

(2) In the direction of arts and crafts.

The teaching that I am advocating in schools of art is, of course, concerned with technique, that is to say, with design in its relation to execution in the particular ways of industry, but it is not technical education—that, I maintain, is not the concern of schools of art, but of the industries. If they want it they must provide it themselves.

It is not *technical* but *practical* education that we want in schools of art. We want the teaching of design, and of design under conditions. What the conditions are does not so much matter, so long as they are strict and strictly adhered to. There is very little that can be taught in the way of design apart from its application.

To my thinking, a design student should never be allowed to make a design without reference to its execution. Once accustomed to design under conditions, he soon learns to accommodate himself to other conditions. But an artist unaccustomed to restraint never learns to work easily under it. He may make beautiful designs. He is not likely to make practical ones.

"Design," it is urged, "cannot be taught." Every artist will agree to that—if by design we understand original invention. That is a gift—though it should not be forgotten that it wants encouragement and training which schools should give. (And you must study design if only to interpret it aright.) But by design we understand also the scheming and planning and perfecting of all manner of decorative device, which is, one may say, the language in which original invention expresses itself, the technique of the thing, without which invention cannot go far, and by aid of which an accomplished designer (in the practical sense of the word) can at least do good and needful work, and earn a living at it. When we talk, as we do, of "original" design, we acknowledge by implication the existence of this design (not original) which can be taught, and ought to be. For industry stands badly in need of it.

The new impetus in the direction of arts and crafts—an admirable movement in itself—has, I am afraid, done something further to divert the energies of teaching away from industry. It has become the fashion to exalt handicraft at the expense of design. Every handicraftsman is to design what he does! That implies the reduction of design to what every workman or workwoman can do. That is to the minimum. I want the maximum. It is an excellent thing to encourage handicraftsmen to venture upon such design as they may have in it them to produce. But that is a very different thing from encouraging design. Design means something more than what every one can do, or can ever be made to do. It implies not only a gift of invention (which schools cannot impart, though they may encourage and develop it), but an equipment of knowledge (historical and practical), of taste and tact, which it should be the business of the schools to inculcate. Design in the practical sense is part memory, part judgment, part ingenuity, and only a part invention.

Moreover, what is the connexion between the arts and crafts and industry? Is not the "arts and crafts" movement in origin and in intent a protest against all organised industry, an endeavour to set up individual workers against producers on a scale that counts commercially? I do not say the protest was not necessary. I grant you that it is in every way good that there should be these individual workers (1) to do, as artists, what manufacturers cannot do, and (2) to raise, in so far as may be, the standard of design and workmanship, but there remain the industries, with which they never can successfully compete. What of them? It is for them I am urging more respect in the schools designed to foster them, and more attention than they generally receive. . . . It is of great importance that there should be in every town a school where anyone, no matter what his occupation, may get instruction in art. And if it is a good school, or the only school, it will attract the better sort of workmen to its classes. What I want is that its classes or some of them, should be instituted with a definite view to the wants of those workmen, and not merely with a vague view to art, that the schools should not be content to serve the industries indirectly, but lay themselves out to help them in every possible way.

Some of the "craft" schools (London and Birmingham) are doing what can be done to supply the place of apprenticeship in various trades. They are teaching the artisan, actual or prospective, the elements of his trade and of the art involved in it.

A two years' course of instruction arranged and supervised by practical trade men should put young people, and I understand does put them, in the way of starting in the workshop with the advantage of a better foundation of knowledge and experience than trade workshops afford. This seems to me a thing well worth doing, and one very much in the interest of good workmanship and of industry generally.

Of the value of craft classes in schools of art generally I am not so fully convinced. They have led to a good deal of amateurish and even childish handicraft which we could well spare. In so far as they have taught students of design the limits and capacities of the material they are working for, that is all to the good. But school is not the place to learn a trade, the conditions and appliances are not those of the workshop, cannot be, and ought not to be. School teaching can only make good the deficiencies of the workshop. It should be preparatory and supplementary to it.

To me the most important thing to teach is design. And it seems necessary to insist that design is worth teaching, apart from the pursuit of a handicraft. It is at least as important in the scheme of education as the hammering of metal, the carving of wood, or the painting of earthenware. There is a more serious problem to be faced than the encouragement, here and there, of an artist-craftsman to do individual work—the question is, How can we better the enormous mass of work which has to be done, and will continue to be done, on the scale of what we call manufacture?

Every school of art almost might answer it by teaching practical design. It is not answered by teaching a craft, and asking the craftsman to evolve his own design. That the craftsman should be encouraged to design, that a modicum of design should be taught incidentally to craftsmanship, is as it should be, in the workshop. In schools I would go to work the other way about, teach a craft incidentally to design, that is to say, with the purpose of enforcing the dependence of design upon conditions of production, and of accustoming the student to work under such conditions. But craftsmanship is all the rage! Well, design is a craft, too, if it comes to that, one that badly wants teaching.

What industry wants is men thus practised in design and in its adaptation; it does not want craftsmen too proud of their invention to carry out any design but their own, or to adapt themselves to the necessities of industrial production.

How, it may be asked, is it possible in a school to teach design, when perhaps the student does not know what he will have to design for, or when the teacher himself is not expert in that particular branch of workmanship? He cannot know everything. My answer is that he need not. It does not so much matter what the student is taught to design for, the important thing is that he should be taught to design under strictly practical conditions. A practising designer will seldom be found to have designed all his life for the kind of thing he is doing. A man trained to work under one set of conditions adapts himself without great difficulty to quite other conditions. To the artist who has never worked except according to his artistic impulse, all outside conditions are fetters.

There is a difference, of course, between surface design and design in the round, and it would be well if there were two design teachers in a school, one expert in surface work, and one in construction and the round. But my contention is, that if these teachers taught design as applied to some one branch of surface or constructional work, they would be preparing their pupils for design of any kindred kind.

A man who begins by designing for stained glass has no great difficulty in adapting himself to the design of posters, painted decoration, carpets, curtains, wall fabrics, chintzes, and so forth. A teacher, of course, whilst teaching design for this or that, would, out of his knowledge, explain by the way how the design would have to be modified if it were to be executed in some other way.

In school a student should be taught design in relation to workmanship and manufacture. He should get there an insight into different kinds of artistic work and have a fair chance of discovering there any personal aptitude he may have for one or other of them. He should not be taught a trade, nor yet the

* Continued from last week, page 164.

full technique of a trade. There is a very substantial reason why this is impossible. The technique of a trade involves for the most part what are more or less trade secrets, which it would not be right to divulge, even if it were possible to find them out. The proper function of the school is to teach, not only the history and theory of art, not only drawing, painting, modelling, and design, but all this in relation to practical employment, and preferably to the work of the factories in touch with them. It should give students the necessary training of eye and hand, and inculcate the artistic taste and feeling which go so far to eventual success in every form of artistic work.

School teaching which supplements factory or workshop training promises in some ways better results than training in a technical or craft school. It occupies, for one thing, a larger field, and does not exclude the amateur, who, after all, is not a negligible quantity. It is of no use training workers to do good work if we do not train purchasers to appreciate it when it is done. And then cultivated amateurs make for a higher standard of taste in the school. They must be kept in their place, of course. If workers are to get through their work, players must not be allowed to take up too much of the teacher's time. But the artistic education of manufacturers, workers, dealers, sellers, and buyers is a matter worth very serious attention.

Art masters and others connected with the schools in places where there is a local industry are, so far as I can make out, all in favour of linking up the schools with the industries. The manufacturers and producers I have consulted all own their indebtedness to the schools of art with which they are in touch, and would like to be in closer touch with them. Where they are not in touch they seem to wish they were. That argues, unless I have had a very extraordinary run of luck, a state of feeling on both sides which promises well for that interdependence of school and workshop which is so greatly to be desired.

It is sometimes said that there is a bar to co-operation between schools and factories in trade jealousy. Is that a very serious one? I hope not. I am told that in some towns where schools of art do their best to serve the local industry, "trade designers" who employ young people to work for them only encourage their attendance at school up to the point at which there is no chance of their becoming designers on their own account. That is only human nature, or rather the bad part of it which we are mean enough to dignify by that name. Even if we were to assume (which we have no right to do) that manufacturers had no pride in turning out good work, we should still have to allow that, as business men, they must be quite anxious to get all the artistic help they can from schools of art, even if they are not anxious (as many of them are) to do what they can for their workpeople. Where employers do not encourage their employees to attend school, it is probably because they honestly doubt the use of the teaching they would get there. Assuming that to be a mistake on their part (which let us hope it mostly is), it is a mistake for which the schools cannot deny all blame. They ought not only to help industry, but to make it clear how helpful they are, and how ready they are to be more helpful still. There is a possible attitude of superiority to practical considerations which is bound to put up the back of business men.

I hear tell of places where manufacturers will not have anything to do with what the school teaches, and the school will not teach what manufacturers say is wanted. That simply means misunderstanding. The teaching really required is probably of a kind more purely artistic than men who call themselves "practical" demand, more practical than educational authorities who do not know much about applied art are disposed to give. Manufacturers are apt to take too narrow a view of artistic education, schools too impractical a view. There ought not to be any great difficulty in finding a common ground from which to start artistic education of the kind that industry calls for. It is *not* the same kind that is called for in the interests of fine art. There can be no possible doubt that schools of art should be in touch with the industries. You see the benefit of it in the production of such factories as those of Delft in Holland, of Rörstrand in Sweden, and of the Royal Porcelain works at Copenhagen. There they draw their painters and modellers from the State schools. . . .

Let us admit the danger that teaching in any way under the guidance of Industry might end in narrowing down education to what "the trade" saw fit to teach. There is no denying the limited outlook trade generally takes of art. I have known valuable prizes to be given, at local exhibitions where the judges were manufacturers, to works which at the National Competition we had thought worth no recognition at all. That is to undo the good of national teaching. The schools to be of any use must lift up the design of the country. But it is not contended that the trade influence should predominate in schools, only that it should be fairly represented, and that the balance of artistic and industrial interests should be preserved.

It seems that where a school of art has among its governing body practical men strong enough to insist upon due regard to industrial conditions, and among its teachers designers practically engaged in industrial design, the schools *do* gather in the young people engaged in workshops thereabouts. The conditions of efficiency are practical men on the governing board, practical men on the teaching staff.

I apprehend that where manufacturers and other practical men are on the governing or advising board, or council, their position is often not strong enough to enforce their recommendations. Some schools seem to quiet their industrial conscience by calling in "visitors," more or less technically competent, to report on the practical value of the teaching. That is all very well as far as it goes. But unless they have power to direct the course of teaching in the school, it does not go far. And there is this to be borne in mind, that the tendency is for the representatives of art to undervalue and to override considerations outside the domain of fine art. I repeat that the practical element should be quite as strongly represented on the governing body as the theoretic, and the headmaster should have direct access to its members. If that were so, the difficulty would be on the way to solution.

With regard to teachers, design should be taught by practical designers—men engaged, or who have been engaged, in industrial work.

Here there comes in an obvious danger. The trade workman is apt to take even a lower view of design than his employer. He may know his trade, and yet have neither taste nor artistic appreciation. It is only by exception that one finds a man at once practical workman, educated artist, and efficient teacher. Let us hope we are educating such men. Meanwhile, what to do?

One thing is clear, the teacher must be a practical workman, not merely an artist craftsman who has acquired for himself some knowledge of technique, but a man who has gone through the mill and knows his trade down to the ground. Assuming him (as I am afraid we must for the moment) not to be a man of taste and high artistic culture, his authority should be restricted to the technical side of teaching, and there should be associated with him, or over him, an artist to look after the other side. That might not at first work very smoothly, though, if the workman were chosen with discretion, there is no reason why it should not. Anyway, a sympathetic workman would grow, in the atmosphere of the school, into artistic appreciation, and might probably in the end be left a pretty free hand.

For my own part, I am against the undue exaltation of the artistic ideal in schools. It ought always to be there at the back of all the teaching, but it should not be talked about too much. Good work is ambition enough for the ordinary student. The extraordinary one will go beyond that, to the full extent of his genius."

Mr. Harrup moved, "That this Congress is of opinion that drawing or art education should be one of the essential subjects in primary schools for all children of eight years of age and upwards."

The resolution was carried.

Art Co-ordination.

Mr. F. Black (Headmaster of the Camden School of Art) read a paper on "Art Co-ordination," in which he expressed the opinion that a strong recommendation was desirable, urging education authorities to take up without delay the question of art co-ordination on a systematic basis and in a thoroughly businesslike manner. In 1903 all art institutions came under one authority in each district, but this important fact did not dispose of the co-ordination problem. It only brought the problem, as it were, within the angle of vision of each education authority. It was still necessary to lay down some absolute rule whereby the workshops and the various educational institutions might be successfully linked together, thus creating a stream or current of pupils, linking the elementary to the advanced schools, and the latter to the workshops, with the return current back again to the advanced school of art.

Memory Drawing.

Principal O. Seinig (Charlottenburg) contributed a paper on "Memory Drawing of Change of Position" and discussed experiments which had been made in public and private schools, of testing the powers of the pupils when representing objects under given changed conditions by means of what might be called a check sheet.

Other subjects dealt with were "The Training of the Sense of Colour," by Mr. A. Miller, and "The Standardising and Teaching of Colour," by Mr. E. J. Taylor.

THIRD DAY'S SITTING.

Training of Art Teachers.

At the third day's sitting of the Congress on Wednesday, MM. Fréchet and Cathoire contributed a joint paper on "The probation period," and expressed the opinion that a training college for art students would be of great value in improving art teaching in France. An art teacher should be required to take a course of professional training, practical and theoretical, before he could be appointed to any school.

A report was submitted by a sub-committee acting on its reference for the British Committee, regarding the training of teachers in drawing and other art subjects. Application was made to 131 education authorities, and 128 replied. Of these 41 make no special provision for art instruction, 17 give instruction to uncertified and supplementary teachers only, 15 give free examination to teachers, 29 have no examinations, 46 have Board of Education examinations, and 6 have examinations other than the Board of Education. One of the recommendations which the Committee made was that teachers of all subjects should practise drawing as part of their professional equipment.

Professor R. Nadler (Budapest), in a paper on the training of drawing teachers for secondary schools, expressed the importance of the teaching of drawing being on a par with the other subjects of the school curriculum, and the teacher of drawing should have the same status as other teachers. Special training colleges for drawing teachers should be founded ranking with universities.

Mr. A. Wesley Dow (New York) followed with a paper also on the training of the art

teacher, and remarked that the task of the art teacher is to convince the public of the true educational value of art instruction for children.

Mr. J. H. Judd (Manchester) contributed a paper on "Drawing and the Training of the Manual Training Teacher." He said that the question of efficient training of the manual or school craft teacher was a State question, and, as such, should be undertaken by the Board of Education without delay.

M. Leon Montfort (Belgium) thought the training of art teachers was the most burning question of the hour. Its lack of thoroughness was the cause of much that was at present unsatisfactory in the teaching of art in schools. He suggested the foundation of an international institute for the teaching of drawing.

Mr. J. Strong (Montrose), in considering schemes for the training of the art teacher, urged the following points: (1) That there should be a definite and extended preliminary education, with only a moderate amount of specialisation, until about the age of eighteen; (2) that the subsequent specialised course should include a course in the theory and practice of education, and, wherever possible, further study of cultural subjects; or (2*a*) a course combining specialisation in art with training for the primary school certificate; (3) a higher specialised course.

In the discussion which followed, Mr. E. R. Taylor (late headmaster of the Birmingham School of Art) observed that children ought to be taught enough of solid geometry to be able to arrive at an appreciation of the mother of all arts—architecture.

Professor Beresford Pite called attention to the Government system existing in this country for the training of art teachers in the Royal College of Art. The course extended over five years, the first two years of which were spent in taking half-year courses in each of the four schools, viz., architecture, design, decorative painting, and modelling and sculpture. In the concluding three years the student specialised solely in one of the four schools he elected to study in, and ultimately left the college after a complete test with the diploma of Associate of the Royal College of Art. Before the expiration of the five years the student might take a schools diploma in one of the branches of the college courses. The commencement of the course, of course, lay in a long series of preliminary studies in the arts. The college was mainly supplied with students who were successful candidates in the various competitions which the Government instituted in the art schools of the country. Many of the local educational authorities had scholarships which were tenable at the Royal College of Art. The students were provided with a preliminary training in the art schools of the country, and were able to take up a position at once without a great deal of preliminary instruction. He thought they would admit that the Government system was an ideal one, and one which should be entirely satisfactory in working. If he might speak as a personal friend, he would say that any want of success which might attach to the effect of the syllabus was due to the want of a satisfactory general education on the part of the students who came to the college. Where the science teacher took precedence over the art teacher it was because he was in possession of a better education. The art teacher and practical designer needed a wide and special training, but, on the whole, his general training was inferior to that of the science teacher. He thought the fault lay with those associated with the centres of education who had been blind to the fact that art was an expression of national life. Art gave expression to themes of thought and of emotion and sentiment which surpassed that of letters. They saw thoughts and emotions expressed in architectural forms which could not be expressed in words, and that had all been neglected by what he might call the psychology of education. When centres of education awoke to the real power of art in national life then they would see opportunities given for a general elevation of the culture of art teachers.

Drawing in the Professions.

In the afternoon session, Mr. W. Egerton Hine (Inspector of Art to the University of London Extension Board) dealt with the subject of the teaching of drawing for the professions, and said that at the Universities, where much spare and dangerously idle time was waiting to be profitably filled up, very definite courses of art study should be open to all, practical lectures and good demonstrations should be given, and honours as well as degrees should be possible of attainment. Architecture, painting, and handicrafts should be included in the curriculum, and one or more of these subjects made compulsory in the examinations. Thus a very beautiful side of man's nature would be cultivated, invaluable to the community, uplifting and ennobling to the individual.

Mr. W. W. Rawson (Inspector of Drawing for the Colony of the Cape of Good Hope) read a paper on the same subject, and justified the inclusion of art training in the University curriculum on the following grounds: (1) As drawing, because of the necessity to make statement at will by graphic means; (2) as handicraft in order that (*a*) the uses and beauties of form may be appreciated and (*b*) that a sound influence upon current workmanship may be exercised; (3) as fine art (*a*) because of the sense of delight afforded by all study of fine arts and the spirit of gentleness and refinement which must follow such delight; (*b*) because by this means a nation may be influenced; (*c*) only by study of the fine arts can we learn to see truly; (*d*) the universal and perennial interest of art.

[Our report will be concluded next week.]

WORKMEN'S COMPENSATION:
Industrial and Other Diseases.

Some very important decisions have recently been given upon the Workmen's Compensation Act, 1906. In the first place, the House of Lords, in the case of Ismay Imrie & Co. *v.* Williamson, have had to consider what is an "accident"? The facts of the case were that a man who had been almost starving was placed by the Seamen's Mission upon a ship to act as a trimmer. Whilst raking out ashes opposite the boiler he suffered from heat stroke and died. The Court of Appeal in Ireland, by a majority of two to one, held this to be an accident, and the House of Lords, by a like majority, affirmed their decision. In giving this decision the House followed the decisions of the House of Lords in Fenton *v.* Thorley, and Brinton's *v.* Turvey, the anthrax case, but it is noticeable that Lord Macnaghten, who was party to both these decisions, dissented in this case, and was of opinion that the death of the workman was due to his physical condition and the nature of his employment. So the facts would also strike a layman; the conditions under which the man was working were found to be absolutely normal, and heat strokes are a usual incident of the employment, but rarely end fatally with a healthy subject if taken in time. There is an anxiety to construe the terms of this Act in their "popular and ordinary meaning" which frustrates its own ends, since such uncertainty is created that litigation is the inevitable consequence.

Certain diseases due to the nature of the employment are, however, now brought specifically within the Act, and the Court of Appeal in Haylett *v.* Vigor & Co. have had to consider for the first time a question arising out of these new provisions. The diseases in question are set out in the Third Schedule to the Act, and include "Lead poisoning and its sequelæ." Sect. 8 provides that "where the death is caused by such disease, and the disease is due to the nature of any employment in which the workman was employed at any time within the twelve months previous,"-compensation is recoverable. The compensation is recoverable from the last employer, but if he alleges that the disease was in fact contracted whilst the workman was in other employ he can join the other employer, who, if the allegation is proved, is then the employer liable. Then subsect. 2 provides that if the workman, at or immediately before the disablement, was employed in any process mentioned in the second column of the schedule, and the disease contracted is one in the first column, the disease "shall be deemed to have been due to the nature of that employment unless the employer proves the contrary."

In the case in question the man had for many years been employed as a painter by Messrs. Crabtree, but had then changed his employ and worked for three or four days for Messrs. Vigor. He was then taken ill, and subsequently died, and the cause of death was granular kidney, which might be a sequela of lead poisoning, or have been brought on by other causes, or be due to inherent disease. The County Court judge awarded 260*l.* against Messrs. Crabtree, and Messrs. Crabtree appealed. For the man's representatives it was argued that subsect. 2 laid the onus upon the employer of proving that the death was not caused by lead poisoning. The Court of Appeal, whilst commenting upon the ambiguous wording of these sections, held that the onus is laid upon the applicant in the first instance of proving death or incapacity from the disease in question, and that the effect of subsect. 2 is to throw upon the employer the onus of proving either (1) that the disease was contracted in other employ, or (2) that death was due to other causes unconnected with the nature of the employment. Before the County Court judge Messrs. Vigor seem to have succeeded in proving the first contention, and Messrs. Crabtree proved the second before the Court of Appeal, therefore the claim failed altogether.

Subsect. 10 of sect. 8 provides that nothing in the section shall affect the rights of a workman to recover compensation in respect of a disease to which the section does not apply if the disease is a personal injury by accident within the meaning of the Act. This subsection was relied upon by the House of Lords in the first case noted above as indicating that such complaints as heat stroke might be accidents, but this uncertainty as to what diseases may be held accidents does away with the benefit of scheduling diseases, as it involves uncertainty. Until late years, when liabilities were imposed by statute, certainty in the law was considered its first essential.

DECORATION OF A PARIS MAIRIE.

The decoration of the new Mairie of the Xth arrondissement of Paris, of which the late M. Rouyer was the architect, has just been completed. The exterior decoration includes eight statues in stone, placed in the niches of the two principal façades. These statues symbolise the principal industries of this district of Paris. On the principal façade, towards the Faubourg Saint Martin, are represented Navigation, Glasswork, Embroidery, and Ceramic work; the sculptors being respectively MM. Théophile Barrau, Demaille, Moncel, and Larche. On the façade towards the Rue du Château d'Eau are represented goldsmiths' work, Artificial Flowers, Perfumery, and Dramatic Art (a somewhat odd collection); the sculptors being MM. Carlus, Caussé, Chrétien, and Gaston Leroux.

In the interior, two rooms situated at the two extremities of the Salle des Fêtes have been decorated with allegorical paintings. In one of them MM. Baudouïn, Tanoux, Hervy, Louis Béroud, and Mangin, have painted groups representing the trades and industries of the district. In the other room M. Moreau Neret has painted a large

composition in the style of the Renaissance, and there are smaller panels painted by MM. Boureau, Delacroix, Lionel Royer, and Thibaudeau. Two ceilings by MM. Gorguet and Bonis complete this part of the decoration.

Lastly, in the Salle des Mariages, a bas-relief of Dalou's, "La République," has been placed behind the Mayor's chair of state; and on the opposite wall of the room is a fine painting by M. Henri Martin representing "La Famille."

The whole scheme of decoration—sculpture and painting—has cost 118,000 francs, or 4,760*l.*; a very small sum, considering the talent and reputation of some of the artists employed.

The principal façade of the building was illustrated in the *Builder* of April 11, 1896.

BABLAKE HOSPITAL, COVENTRY.

BABLAKE, or Bond's Hospital, is one of those picturesque half-timbered buildings in which mediæval Coventry was so rich. It was founded in 1509, by Thomas Bond, as a home for old men of the Trinity and Corpus Christi Guilds, and it is connected with the Bablake School for boys founded in the reign of Elizabeth. In 1559 it was further endowed by Thomas Wheatley, a wealthy ironmonger of Coventry. In 1619 one of the pensioners, wishing to become senior brother of the house, to which office additional privileges were attached, poisoned eight of his brethren with ratsbane, but his crime being discovered he promptly poisoned himself.

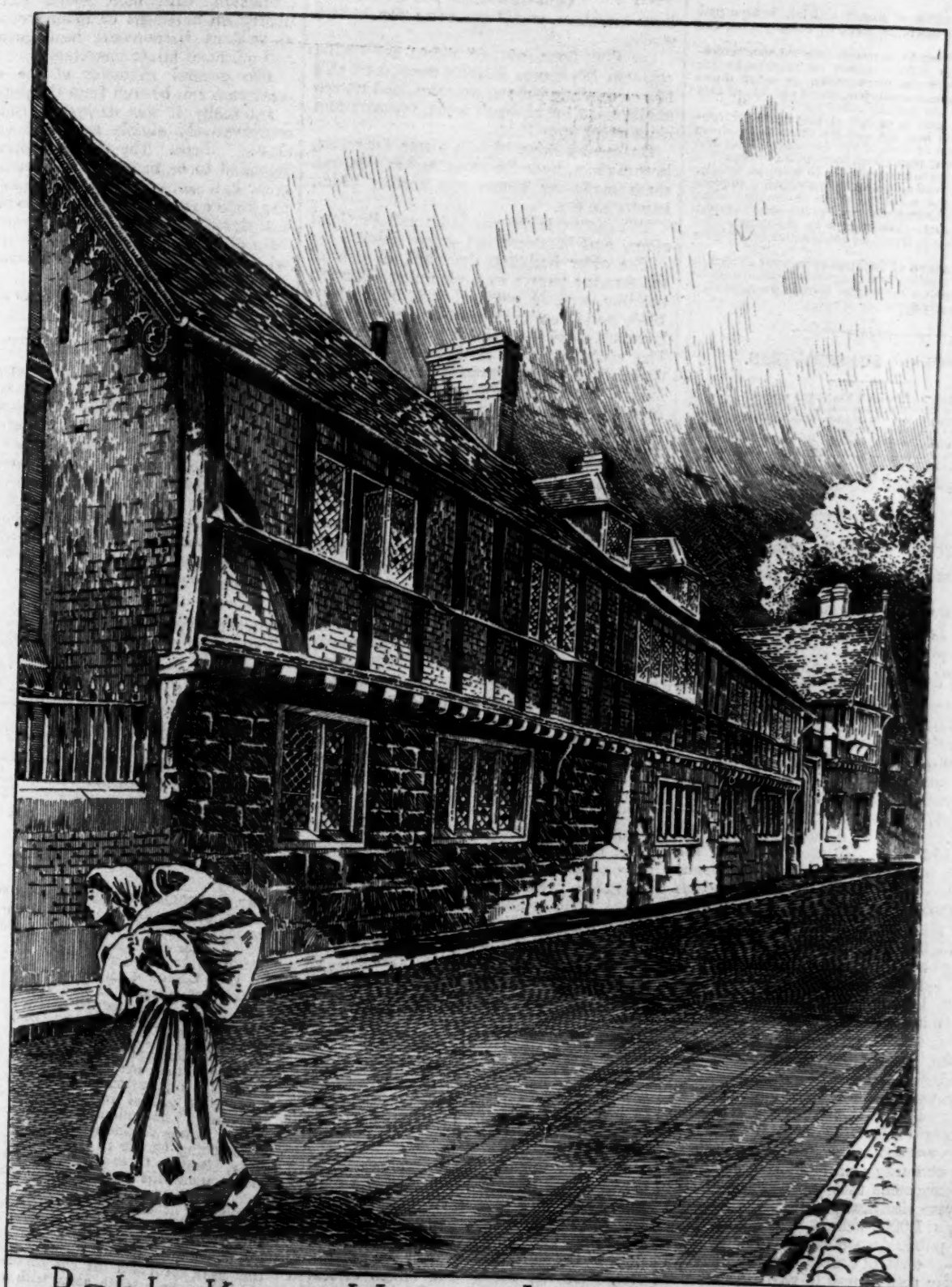
SIDNEY HEATH.

THE TRIBUNAL OF APPEAL:

GIBBON AND OTHERS v. THE LONDON COUNTY COUNCIL.

THE Tribunal of Appeal has dismissed the appeal by Elizabeth R. Gibbon and Constance Moore against the consent of the London County Council to the retention of a building on the western side of Salem-road, Bayswater, known as Moscow-court, exceeding in height the distance of the front or nearest external wall of such building from the opposite side of such street, as shown on the plans submitted on behalf of Messrs. Metcalf & Greig, Wm. Whiteley, Ltd., and Mr. G. C. Bond.

The case, which was of a complicated nature but of considerable importance, was fully reported in the *Builder* of August 1. The Tribunal awarded 10*l.* 10*s.* costs to Messrs. Metcalf & Greig, 100 guineas to Wm. Whiteley, Ltd., and 10*l.* 10*s.* to Mr. Bond.



Bablake Hospital, Coventry.

Sidney Heath.

THE BUILDER

AUGUST 15, 1908.

TO CORRESPONDENTS.

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All communications must be authenticated by the name and address of the sender, whether for publication or not. No notice can be taken of anonymous communications.

The responsibility of signed articles, letters, and papers read at meetings rests, of course, with the authors.

We cannot undertake to return rejected communications; and the Editor cannot be responsible for drawings, photographs, manuscripts, or other documents, or for models or samples, sent to or left at this office, unless he has specially asked for them.

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Fifty Years Ago.

FROM THE *Builder* OF AUGUST 14, 1858.

ELECTRO TELEGRAPHIC PROGRESS.

TO THE unexpected but gratified surprise of almost everyone, the Atlantic cable, as we had just time to announce in our last, was safely laid from Valentia to Newfoundland. The whole distance from Trinity Bay, Newfoundland, to Valentia, is about 1,650 nautical miles, and this has only required 2,022 miles of cable; the slack, therefore, is just 372 miles, or about 22½ per cent.; and the company have a remainder of 500 miles, which, unless some untoward accident should, after all, again disappoint the public hopes, might anon be used towards the shortening of our telegraph time-distance from India. So doubtful did the final success of the Atlantic cable appear, that even Professor Thompson, who was immediately engaged in the undertaking, acknowledged, sanguine as he still was of a successful issue, that the "calculus of chances is dead against us." Not having failed, therefore, the triumph is indeed all the greater. It has completely taken the shine of "glory" out of the other great event which was coming off simultaneously with it, namely, the inauguration of the French war-port of Cherbourg; and we would not willingly have had Britain exchanging with France the respective reasons for glorying on this two-fold and curiously coincident occasion. On the announcement that the new world and the old were electrically united, the Atlantic Company's 1,000*l.* shares—which had sunk with the public despondency so low as 300*l.* to 340*l.*—at once, of course, became buoyant and rapidly rose almost to par. As for the influence of this great success on submarine telegraphing in general, even though the cable were after all unaccountably to fail in its transmission, what scheme will now be considered too vast for the public confidence? Yet it is but a very few years since we, like a few others who were sanguine of success, dared not fully to express, in the *Builder*, the perfect confidence we had in the practicability of crossing the Atlantic by a telegraphic line, and felt obliged to come out with it cautiously and with fear, in case of working too convulsively the sneering apparatus of the short-sighted quasi-critics of society on such a subject.

Illustrations.

ADDITIONS, GOLDSMITHS' COLLEGE.

THESE additions have recently been made to Goldsmiths' College, New Cross, and consist in:—

Ground floor of five classrooms, large art room, and large room for nature study.

On first floor, of two rooms for crafts, costume life room, antique room, and still life room, design room, museum, and nature study, head art-master's room, lavatory and cloakroom, etc.

On second floor, of two rooms for crafts, lecture room, nude life room, higher painting, three modelling rooms and casting room, lavatories, etc.

The materials are red brick and Portland stone, and Westmorland green slates.

The older building, described in one of the Sunday papers as a charming Georgian building, was, in point of fact, built about 1840, and is an indifferent example of the heavy classic of the time, in brick and stucco. The work has been carried out by Mr. J. Carmichael; sanitary work and heating by Messrs. Burn Bros.; the carving by Messrs. Aumonier & Son, to the design and under the supervision of Mr. Reginald Blomfield, A.R.A., architect, of New Court, Temple, E.C.

COMPETITION DESIGN FOR THE PALACE OF PEACE, THE HAGUE.

THE purpose of this building was one which, in the author's opinion, called for a quietly dignified treatment rather than the monumental. Regarding it as in the first place a house for the transaction of business of the most important character, it was sought to arrange the required accommodation in such manner as to secure the utmost convenience and privacy for each department and at the same time provide for easy intercommunication.

As will be seen from the plan, the building as designed consisted of two principal blocks—the courts block and the library, these being connected by the great hall.

The principal entrance was centrally placed, a vestibule connecting the porch with the great hall, which was regarded rather as a thoroughfare for those having business in the Palace than as a gallery or lounge for the public. The grand staircase was arranged in two wings, between which was an entrance to the corridor of the courts block.

The courts were two in number, and attached thereto were waiting-rooms, judges'-rooms, party-rooms, etc., with cloak-rooms and lavatory accommodation. A private entrance for officials was provided from the south-east terrace.

In the case of the larger court a public gallery with a separate entrance was provided, in connexion with which there was cloak-room and lavatory accommodation for each sex.

Over the waiting and judges' rooms, with direct access from the former, was a mezzanine floor, with private or study rooms for the use of secretaries and persons engaged on various cases in the courts. On the upper floor of the central block over the great hall, etc., were the rooms and offices allocated to the secretary and staff, and over the vestibule and porch main entrance were placed the President's-room and Council-chamber.

The library block contained a large library, or bookstore, in five stories, with stairs and book-lifts at either end. Opening from the main library, opposite to an entrance from the great hall of the Palace, were two reading-rooms with a delivery-room. Also opening from the main library was a map-room.

Offices were provided on the ground floor for the chief and sub-librarians, and on the mezzanine and upper floors were cataloguing-rooms and offices for the Carnegie Foundation.

Bookbinders' workshops, packing-rooms, etc., were provided below the library, and having direct access therefrom, as well as a separate entrance from outside.

Porters'-rooms, telephone-room, lift, service staircases, cloak-rooms, lavatories, etc., were provided for each department.

Caretakers'-dwellings were provided in connexion with both courts block, and library on basement or lower ground floor, as well as spare-rooms, heating-chambers, and offices of minor importance.

The general character of the external treatment can be seen from the perspective.

Internally it was desired to maintain a comparatively simple treatment on "neo-classic" lines. The grand staircase was intended to be in marble and the facing of great hall stone above a marble dado. In the large court it was proposed to introduce sculptured allegorical figures representing the Arts of Peace, and, in the windows, panels with the arms of the various States interested in the Peace Congress.

A. J. CLIFFORD EWEN.

PHOTOGRAPHS FROM BRUGES.

WE give four views in Bruges, from photographs by the Photochrom Company, in order that readers who are returning from the Architectural Association excursion at the close of this week may see something in our issue to remind them of the excursion.

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DECORATIVE DESIGNS BY STUDENTS OF THE ROYAL COLLEGE OF ART.

THESE are two studies for mural paintings, by students of the Royal College of Art. Their intention is sufficiently indicated by the titles on the plates.

The one entitled the "Gates of Life," by Mr. Lewis, is the best, and promises well for future work by the same hand. The other is clever in regard to the individual figures, but it wants unity and decorative quality in composition.

ST. NICHOLAS CHURCH, PLUMSTEAD.—The extensive additions which have more than trebled the seating capacity of the old XIIIth century church were dedicated on July 18. The fabric sustained serious damage through the explosion in the Chemical Research Department at Plumstead Marshes in February of last year. The church had remained during several years in a ruined condition after the falling in of the roof early in the XVIIth century. Then one John Gossage reinstated the transept and the south and west walls of the nave, and effected a reparation which subsequently gave way to a partial restoration of the earlier structure. The red-brick tower, mellowed in colour, forms a characteristic example of its time, being Gothic in its outline and proportions, rising in three stages, and having battlements upon the parapets and angle turrets, but with Renaissance detail in the moulded brickwork of the window dressings and the cornices. The plans and designs of Messrs. F. H. Greenaway and J. E. Newberry, which were exhibited in the Royal Academy rooms this year, provided for the conversion of the old nave into a south aisle, with additions on the north and east sides embracing a nave, north aisle, chancel, morning chapel, chancel aisle, sacristy, organ-chamber, and vestries for the clergy and choir; the seating accommodation is for about 900.

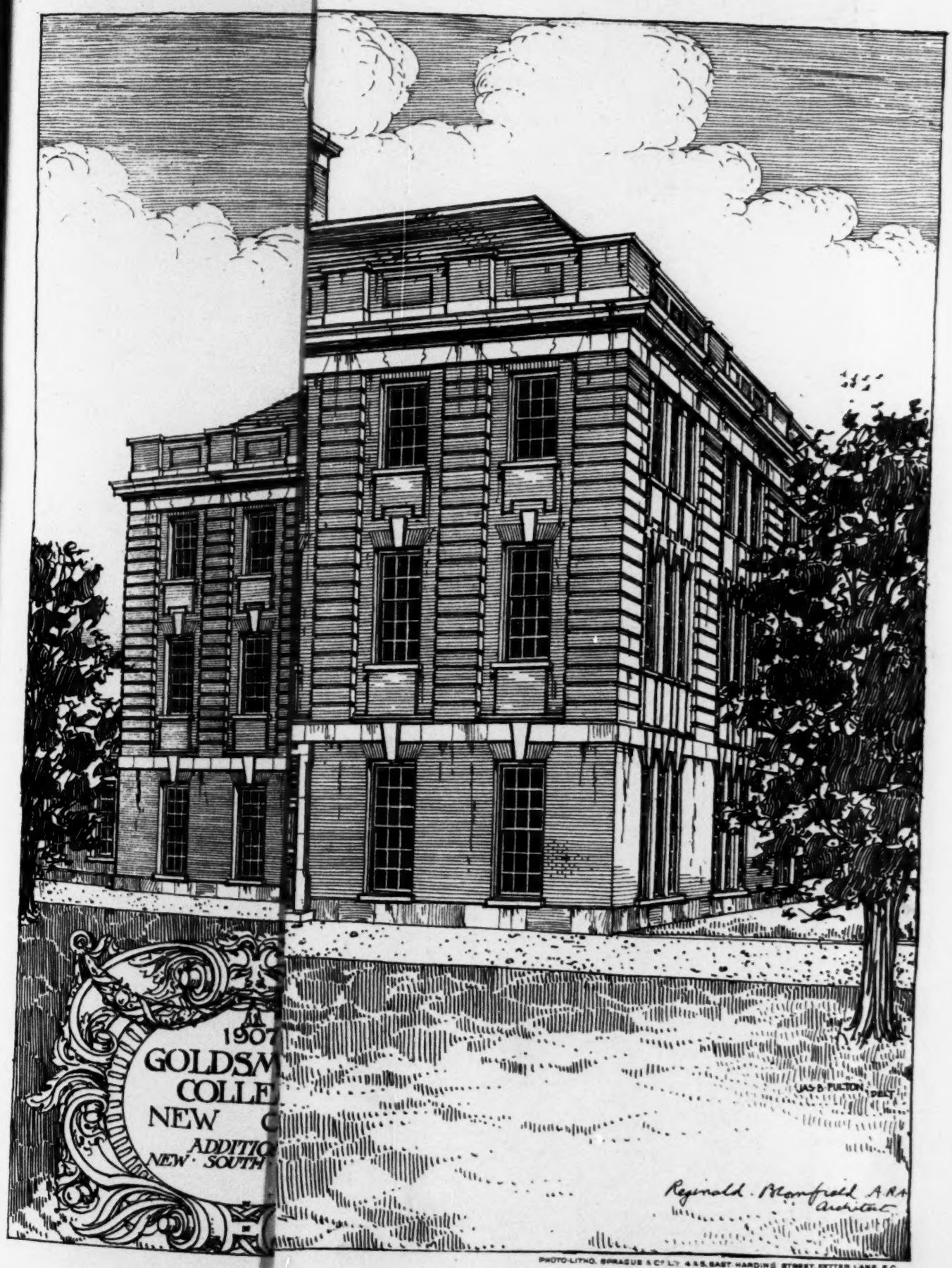

PHOTO-LITHO. SPRAGUE & Co LTD 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

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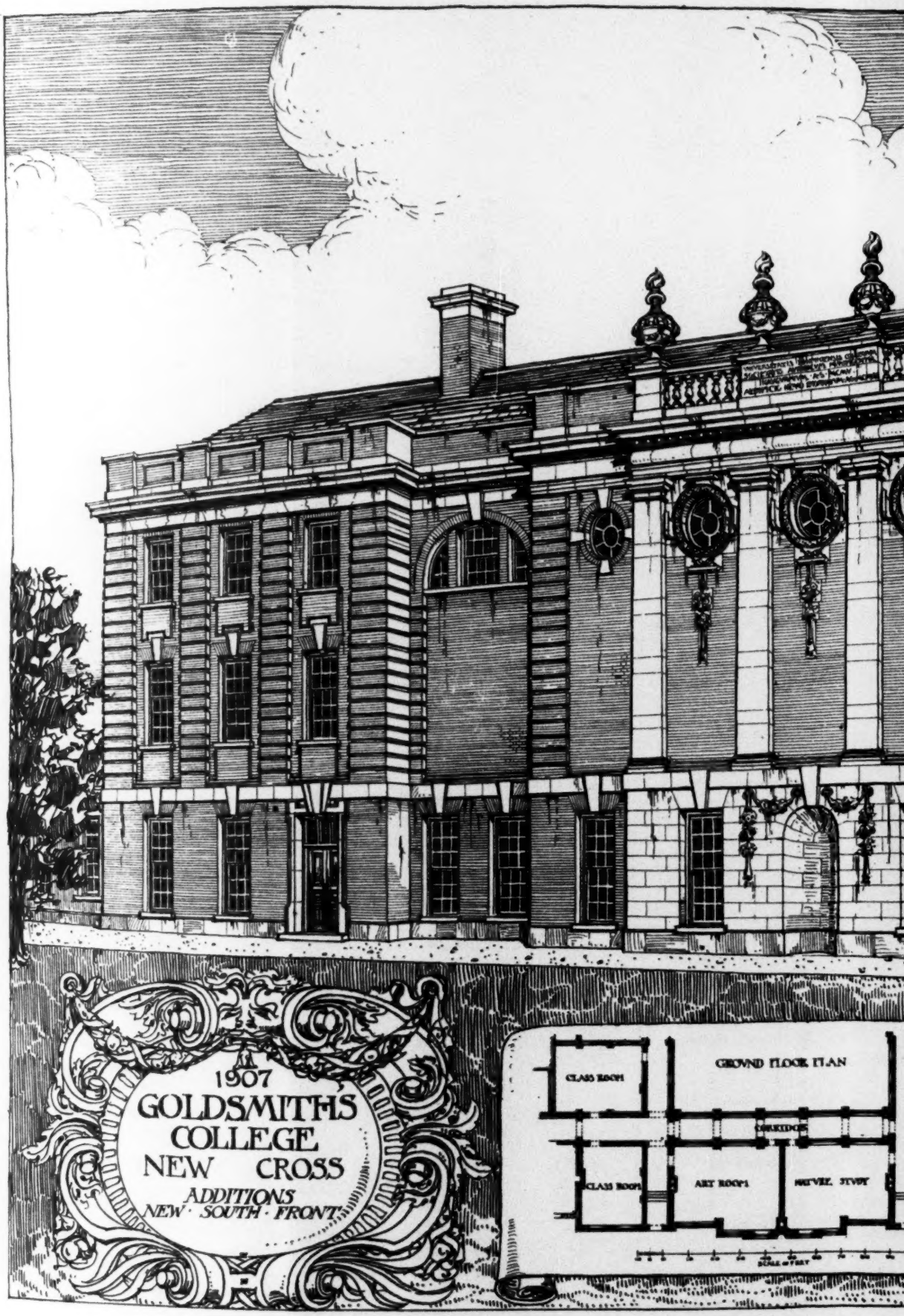

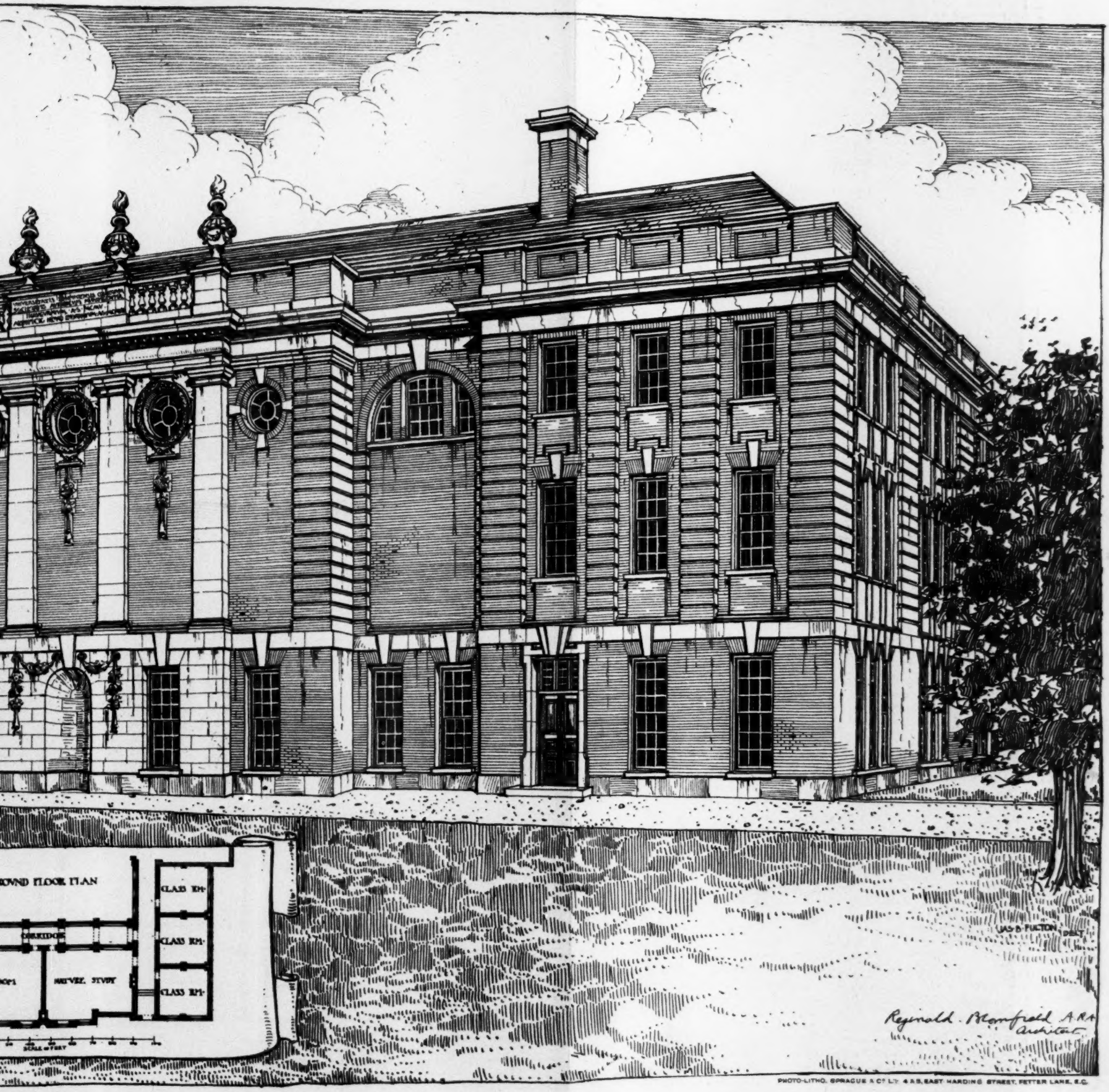

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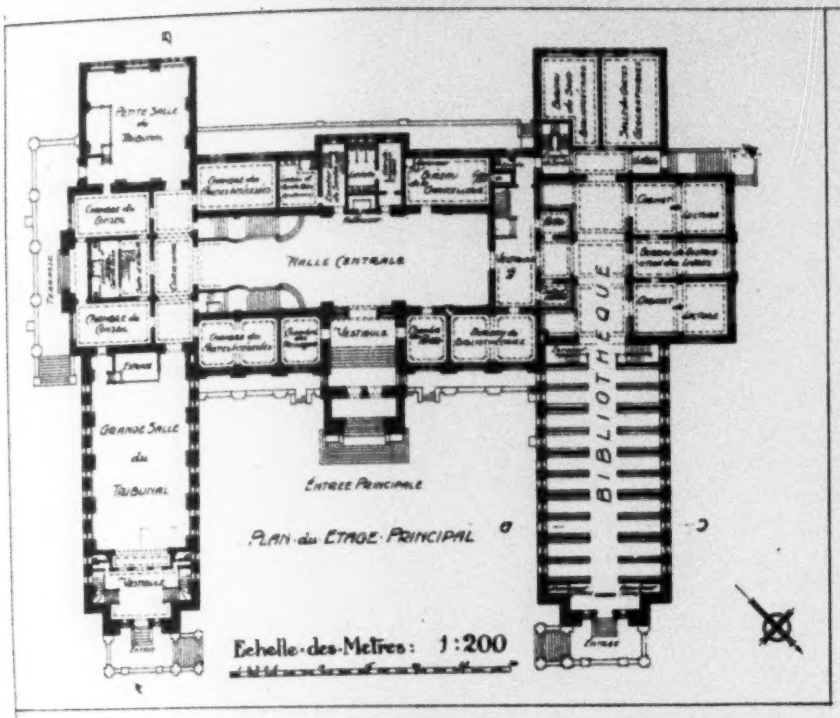
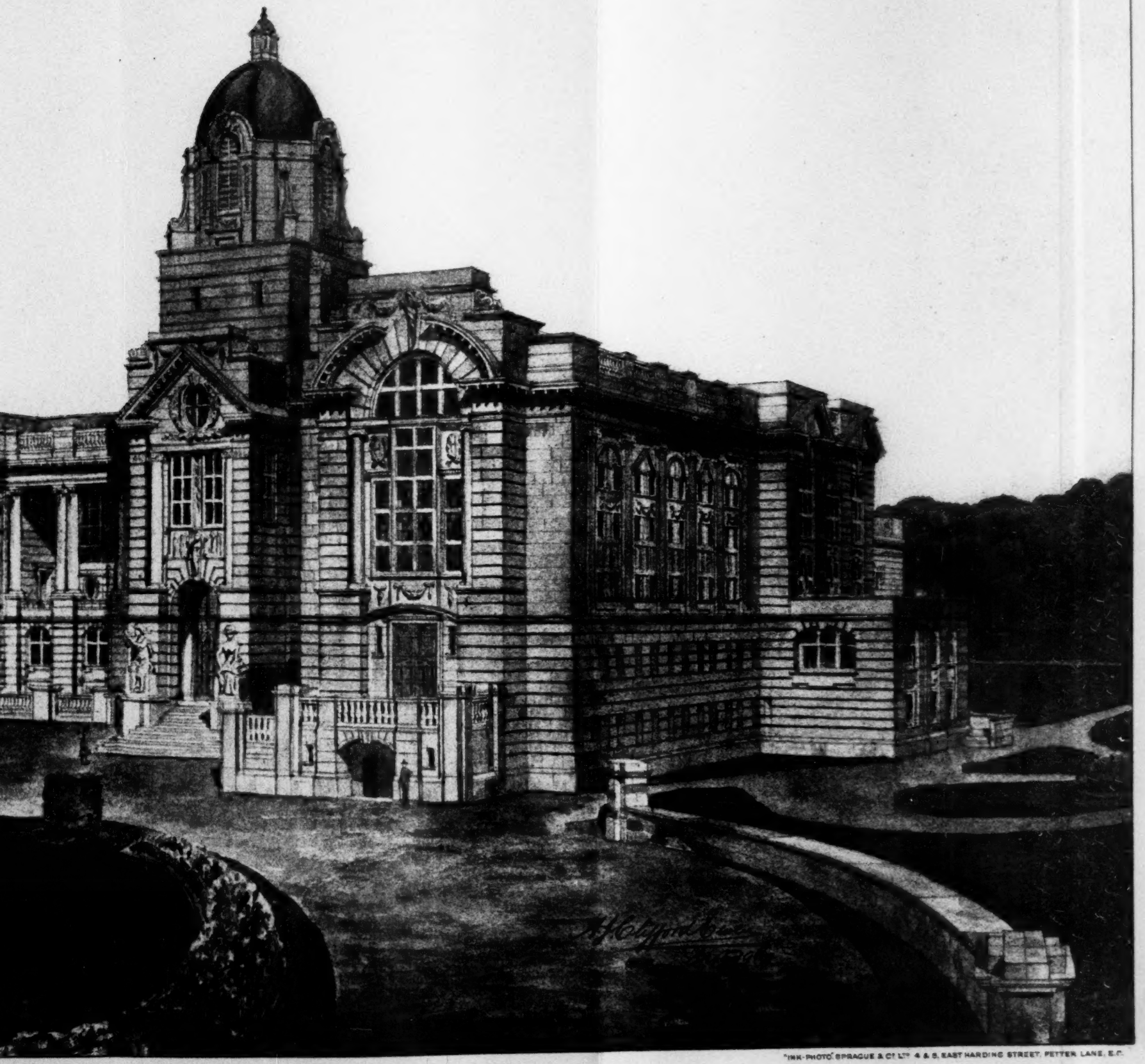


PALAIS DE LA PAIX
à l'usage du
TRIBUNAL PERMANENT d'ARBITRAGE

DESIGN FOR THE PALA



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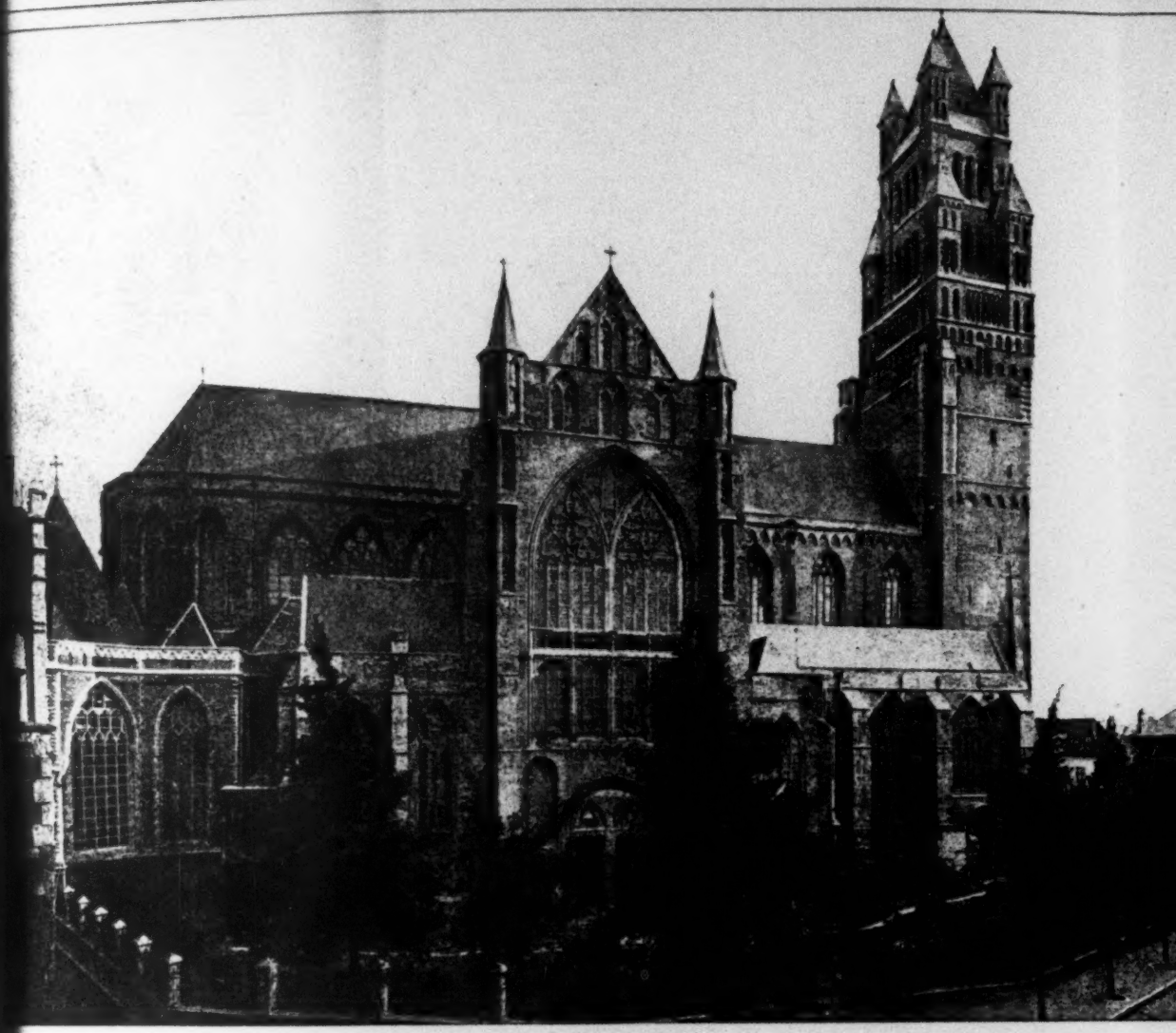
GN FOR THE PALACE OF PEACE, THE HAGUE.—By Mr. A. J. Clifford Ewen.



ST. SAUVEUR.

A CANAL VIEW.

THE PHOTOCHROM CO., LTD.

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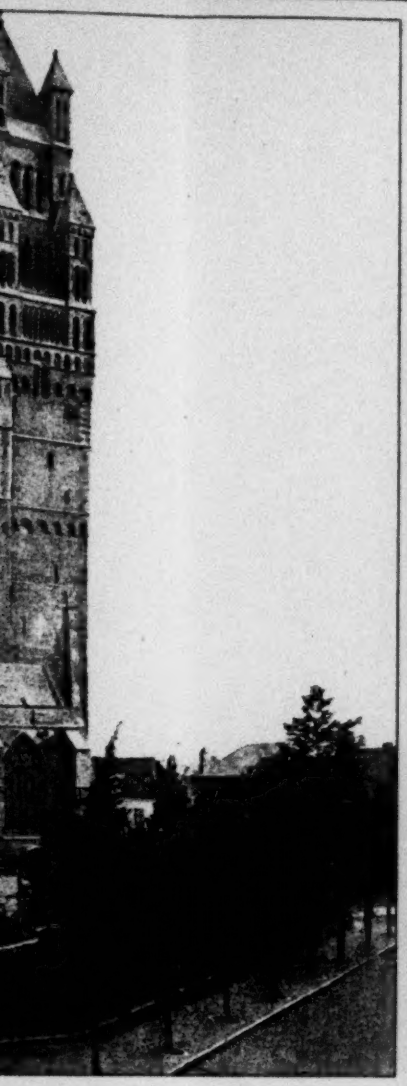

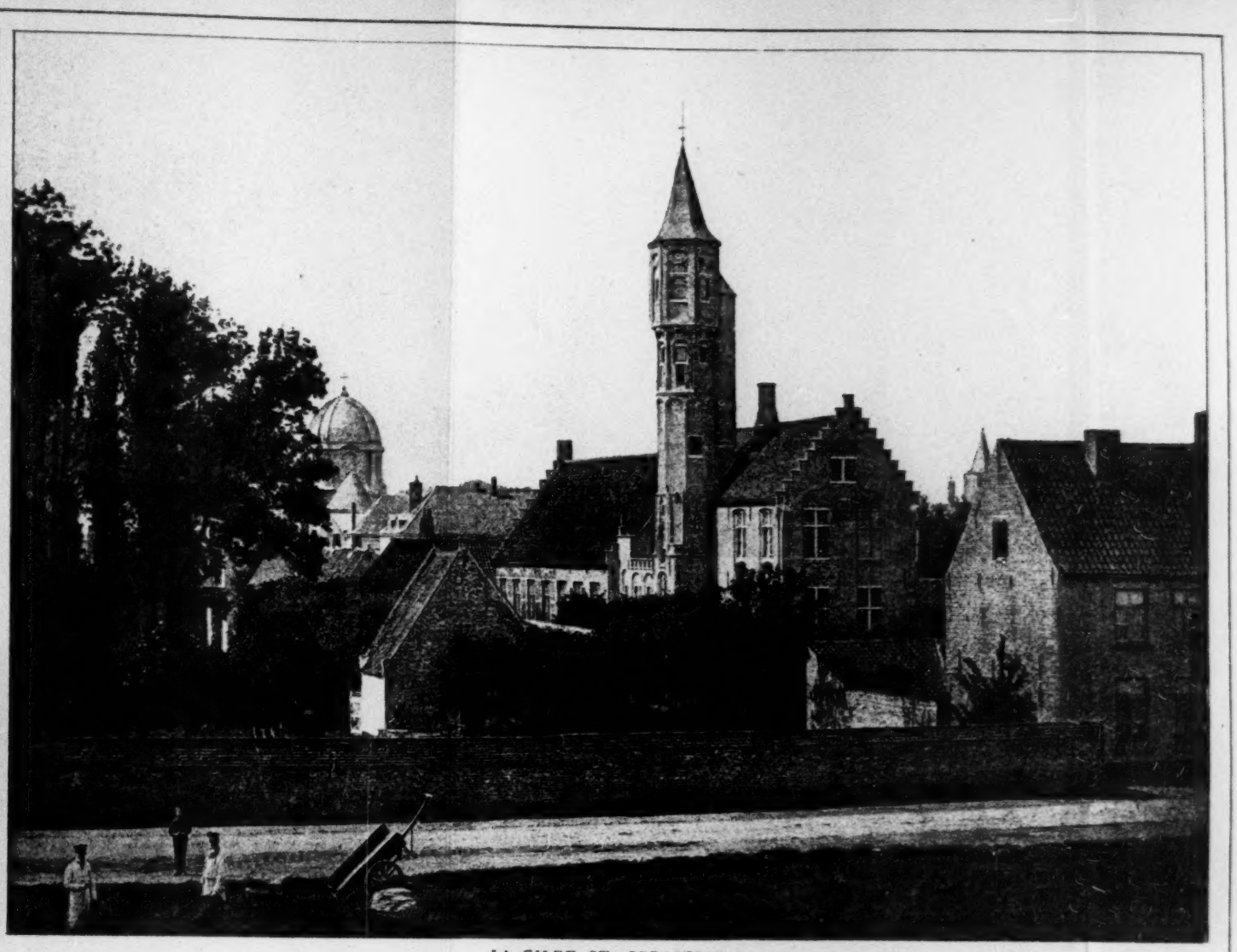

LA GILDE ST. SEBASTIAN.

A STREET VIEW, SHOWING THE LIBRARY.

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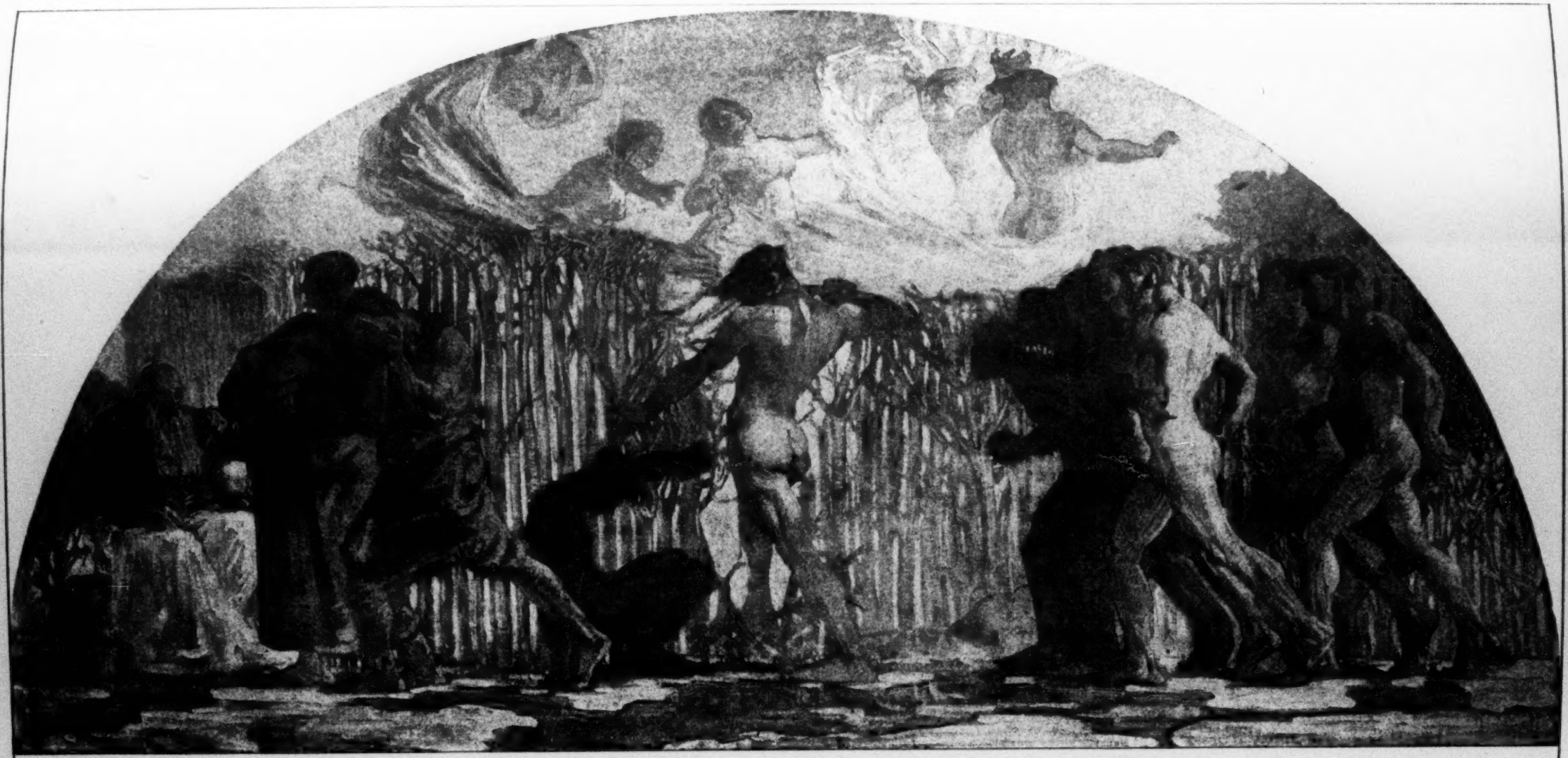
PHOTOGRAPHS FROM BRUGES.

(IN ILLUSTRATION OF THE VISIT OF THE ARCHITECTURAL ASSOCIATION.)



"THE GATES OF LIFE."—DESIGN BY MR. T. LEWIS.

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DECORATIVE PAINTINGS BY STUDENTS OF THE ROYAL COLLEGE OF ART

"INK-PHOTO" SPRAGUE & Co. LTD. 4 & 5, EASTHARDING STREET, FETTER LANE, E.C.

"HENRY III. GRANTING THE FIRST CHARTER TO NEWCASTLE TO SINK COAL SHAFTS."—DESIGN BY MR. A. MACKINDER.

Legal Column.

TRADE UNIONS AND THE LAW.

YET another decision on trade union law has been given in the Chancery Division in the case of Cope *v.* Cressingham. In this instance the union invoked the aid of the Courts in the following circumstances. The general executive council of the union suspended from his duties the general secretary. One of the branches objected to this, and passed a resolution that unless he was reinstated the branch would secede from the union, and the funds would be distributed amongst the members. The plaintiffs, as head trustees of the union, then commenced this action against the trustees of the branch, claiming a declaration that the resolution was *ultra vires*, and an injunction to restrain the defendants from dealing with the funds otherwise than in accordance with the rules of the society. The Court held that it had authority to interfere (acting on the authority of the decision in the House of Lords in Howden *v.* Yorkshire Miners' Association (1907)), this being an action to restrain the defendants from using the funds in an unauthorised manner, and the resolution was declared to be *ultra vires*. The distinction between this case and Osborne *v.* Amalgamated Society of Railway Servants and Steele *v.* South Wales Miners' Federation appears to be that in these latter cases a parliamentary levy and a resolution as to the support of a particular political party were valid as being *intra vires*, but, none the less, the case illustrates the fact that in trade union law what is sauce for the goose is no longer sauce for the gander. If a dispute such as the above had arisen between workmen and workmen, or between employers and workmen, it would have been a "trade dispute," *i.e.*, a dispute connected with the employment or non-employment of a person and any act done in contemplation or furtherance of it would, under sect. 3 of the Trades Disputes Act, 1906, have not been actionable. See Conway *v.* Wade.

THE TRADE DISPUTES ACT.

The Courts have been much occupied with litigation concerning trade unions, and one of the most important decisions is that delivered by the Court of Appeal upon the effect of the Trade Disputes Act, 1906, in the case of Conway *v.* Wade, which we commented upon when in the Court below in the *Builder*, June 20 last. The plaintiff in the action was employed by a certain firm, but some seven years before a fine had been imposed upon him by another branch of the union to which he then belonged which he had never paid. The defendant was an officer of the union, but, acting without the authority of the executive, had threatened the man's employers that the union men would leave if this man continued in their employ, and the man was compelled to leave. The jury found that the threat was made with the intention of preventing the plaintiff from getting or retaining employment, and that this was done in order to compel the plaintiff to pay the fine in arrear, and to punish him for not having done so. But the jury found that there was not a trade dispute existing or one contemplated by the men. The whole question turned, therefore, upon the point as to whether the defendant had done the Acts complained of "in contemplation or furtherance of a trade dispute" within sect. 3 of the Trade Disputes Act, 1906. The Divisional Court upheld the finding of the jury; the Court of Appeal have reversed this judgment, holding that there was a trade dispute in existence arising out of the non-payment of the fine "in furtherance" of which the threats were uttered, and that, moreover, there was another dispute "in contemplation," a dispute between the employers and the union men if the plaintiff continued to be employed. In the result, therefore, the defendant was held protected by the Trades Disputes Act, 1906, and the action failed, but the case is likely to go to the House of Lords. Some of the observations of the Master of the Rolls upon this extraordinary statute are worthy of attention. He points out that sect. 3 cannot be read as applying only to acts done by parties to the dispute, but that it embraces any outsider or busybody. When a dispute is not in existence the action of the person is within the protection of the section whether it prevents a dispute or stimulates it, but when a dispute is in existence an act done to terminate it is not within the section as it must be done "in furtherance" of it. Further the Act does not apply to a dispute between masters and masters as do the Trade Union Acts, 1871 and 1876. It is to be hoped that statutes of this description will not often find a place in the Statute Book.

Competitions.

PROPOSED NEW COUNTY HALL AND OFFICES AT CARDIFF.—The date for sending in plans in this competition has been extended to November 1, 1908.

BOYS' SCHOOL, CARDIFF.—The Cardiff Education Authority have adopted plans for the new intermediate school for boys, which is to be built on the site of the temporary buildings in Newport-road, at a maximum cost of 12,000*l*. Mr. Leonard Stokes, of London, who had been chosen as expert assessor, reported on thirty-four sets of plans. The first premium of 50*l*. was awarded to Messrs. Teather & Wilson, architects, of Cardiff, and the second premium of 40*l*. to Messrs. James & Morgan, architects, of Cardiff; while the third premium of 30*l*. was given to Messrs Teather & Wilson, who had sent in two sets of plans. Mr. Stokes recommended that the successful firm be employed as architects, and this course was adopted. The third premium has not yet been awarded.

WARDS FOR ISLINGTON WORKHOUSE.—At a meeting of the Islington Board of Guardians on August 6, the plans for the proposed extension of the receiving wards and new vagrant wards at the St. John's-road Workhouse, submitted by Mr. William Lockwood, 12, Sherwood-street, W., were provisionally adopted. In June last the assessor in the competition, Mr. Lewis Solomon, Union-court, Old Broad-street, E.C., reported that of the plans sent in by the seven competitors, those of Messrs. F. H. Greenaway & J. E. Newberry, 21, Queen Anne's-gate, Westminster, were the best, irrespective, as regards the vagrant wards, of the site. The two premiums of 15*l*. and 10*l*. were consequently awarded to that firm. These and other plans, together with the assessor's report, were referred to the Accommodation Committee for consideration, and at the last meeting of the Board the Committee reported that the estimated cost of the works according to the plans pronounced best by Mr. Solomon, was 3,350*l*., and the assessor reported that figure to be too low, he approximating the cost at nearer 5,000*l*. The Committee had come to the conclusion that the plans of Mr. Lockwood were the most economical, and would give the accommodation required, and the Guardians decided to adopt these subject to the architect attending before the Committee and satisfying them that the plans would be generally approved by the Local Government Board, and that the work can be carried out for a sum not exceeding 2,000*l*., as stated by him on the plans.

CALVIN MEMORIAL, GENEVA.—Artists of all nationalities are invited to submit—not later than September 15—drafts and models of competitive designs for a monument to be erected in honour of Calvin, which is to be conceived upon broad historical lines and to recall the names and influence of the Reformers in all parts of the world. Prizes to the amount of 30,000 francs will be distributed by a jury consisting of MM. G. J. Frampton, R.A., Horace de Saussure, and Alfred Cartier, of Geneva; Professors Brumo Schmitz and Tuaillon, of Berlin, and Gull, of the Polytechnicum, Zurich; and Ch. Girault, membre de l'Institut, and A. Bartholomé, of Paris, with the chairman of the Association du Monument de la Réformation, Genève.

BOOKS RECEIVED.

REINFORCED CONCRETE DIAGRAMS. By G. S. Coleman, A.M.Inst.C.E. (London: Crosby Lockwood & Son. 3s. 6d. net.)

THE BUILDING MECHANICS' READY REFERENCE (Cement Workers' and Plasterers' Edition). By H. G. Richey. (New York: John Wiley & Sons. London: Chapman & Hall, Ltd.)

Correspondence.

ILFORD HOSPITAL COMPETITION.

SIR,—Being a competitor in this competition, I had my drawings returned this week very much damaged, and a charge of 8s. 9d. for return carriage to pay. I should be glad to know if it is now the usual practice for competitors to pay return carriage on drawings, as, personally, I have never had to do so before.

I wrote and complained of the injustice of it after months of labour and expense, but the only reply I got was a postcard from the secretary stating he had no authority to pay return carriage. It is bad enough to have to pay for conditions, but this looks like adding insult to injury. D. H. H.

THE PATENT AND DESIGNS ACT AND THE EFFECT ON FACTORY PROPERTY.

SIR,—It may be of interest to your readers to know that practical and beneficial results have already accrued through the important alteration in the above Act.

The foreigner affected by the same had to look to the future to protect his manufacture, with the result that the following important firms have acquired land and factories in England to carry on their business:—

1. Elberfelder Farbenfabriken (represented by the Bayer Company, Ltd.) acquired 24 acres of land at Port Sunlight, Cheshire.
2. Hoschlisfarhwerke Company acquired 7 acres of land at Ellesmere Port, Cheshire.
3. Gillette Razor Company, works, Leicester.
4. Sanatogen Food Company, land, Cornwall.
5. Pintsch Suction Gas Plant Company, works, London.
6. National Cash Register Company, works, London.

In addition to the foregoing specific instances of actual movements, we are in negotiation with numerous German and American manufacturers requiring sites and factories in different parts of England—the trades to be carried on consist principally of chemical, engineering, and pottery industries.

We feel certain, having gauged the feeling abroad on the effect the passing of the Patent and Designs Act is having on manufacturers, that the movement is only beginning, and there will be a big development of it, principally amongst German manufacturers who are makers of numerous chemical products largely used in dyeing, etc. The American industry, being more in machinery, is not so much affected, but from the match, electrical, pottery, and other industries we may have firms opening up works in England.

We, as specialists in dealing with factory property in England, and knowing what the requirements are of the foreigner, are able to state that there is every possibility of the opening up of numbers of unlet works in the United Kingdom in the near future.

LEOPOLD FARMER & SONS,
London, E.C. Surveyors.

THE NATIONAL TRUST FOR PLACES OF HISTORIC INTEREST.

THE National Trust for Places of Historic Interest or Natural Beauty have just issued their thirteenth annual report, in which they state that the money needed for the proposed purchase of some of the land covered with the Sarsen stones, near Marlborough, known as the Grey Wethers, has now been fully subscribed and the land conveyed to the Trust. The Trust have made an important addition to the land purchased in Lockeridge Dene, where all the stones of value—and these among the largest in the district—are now secured for preservation. At the close of the last report the council made reference to the hope that the Trust might before long become the owner of Ludshott Common, near Hindhead and one side of the adjacent wooded valley in which lie the ponds known as Waggoners Wells. The common is 542 acres in extent, and rises at its highest point to a height of 550 ft. above sea level. The price to be paid for it is 1,000*l*., or about 1*l*. 17s. per acre. Unlike the Hindhead commons, which are traversed by the main road from London to Portsmouth, Ludshott Common does not abut on any public road; but there are public ways to it and over it. Adjoining the common and between it and the ponds lie the 17½ acres of woodland which it is hoped may also be acquired for preservation. This land is enclosed private property, which, if not acquired, might be built upon, and it is proposed to pay 39*l*. an acre for it, while land on Hindhead has cost as much as 800*l*. an acre. Taking the two pieces of land together 1,800*l*. is required, and of this sum all but about 150*l*. has been subscribed.

Very recently a resident on Hindhead, Miss

James, of Westdown, has offered to the Trust as a free gift a valuable tract of heathland on the Portsmouth road, and a beautiful hill-side commanding lovely views to the south, and hitherto closed to the public, the two tracts of land extending together to about 65 acres. This munificent gift the Trust will accept. It will be remembered that four years ago 3¼ acres of land on Crockham Hill, near Edenbridge, in Kent, were presented to the Trust through Miss Octavia Hill. The council is very glad to be able to report that to this land has been added, also through Miss Hill, another 8 acres. This additional land lies to the north of that previously owned by the National Trust, and is similar to it in character; but much of it is on the highest level, and gives a wider extent of land commanding the very extensive and beautiful panorama stretching across the Weald of Kent. The council hope that before long the Trust may be in possession of additional land on the western shore of Derwentwater. Near the southern end of Brandlehow is a wood known as Manesty Coppice. An attempt has been made to sell this land for building purposes, but a few gentlemen of the district, realising the value of this land to the amenities of Derwentwater, have joined together to buy it with the view of controlling its development, and it has been arranged that the National Trust shall contribute 500*l.* to the purchase price, and shall receive in return a portion of the lake frontage to be preserved as open space. This area will be increased by the generosity of some of the subscribers to the purchase of the estate, who have generously promised to surrender their interest to the Trust.

A scheme for the preservation of Towyn Trewan Common, in Anglesea, is receiving the active attention of the Commons Preservation Society and the cordial sympathy of the council of the Trust. If the scheme is carried through the whole common will be regulated, and about 600 acres of it vested in the Trust, though managed by a local committee. But to ensure the success of this plan a further sum of 700*l.* is required. The council hope that before long the important metropolitan common of East Sheen may be vested in the National Trust. The common is some 53 acres in extent, and under a scheme of regulation made in 1898 is managed by the Urban District Council of Barnes. In consequence of further donations received, the council have been able to make a beginning in the work of repair to Barrington Court, and though there is much yet to be done in order to put the place in thorough order, the more urgent matters have now received attention.

The council state that Mr. Asheton Tonge has generously offered Tonge Hall, Lancashire, to the Trust; but the liabilities attaching to its ownership and the fact that it is very dilapidated make acceptance of the offer impracticable unless a considerable financial support can be guaranteed. Application has recently been made by the incumbent for a faculty to add a vestry to the church at Stewkley, in Buckinghamshire. This church is one of the best complete examples of a Norman church in this country, with unaltered ground plan, and the council felt that nothing should be done without the most careful thought, or which had not been proved to be absolutely necessary. The faculty has, however, been granted, and the council, though regretting his lordship's decision, recognise the courtesy with which the Bishop of the diocese received its representations, and the careful consideration that he gave to the arguments of those who were opposed to the scheme. The attention of the council was called last autumn to the condition of the Court-house at Udimore, in Sussex, not far from Rye, and to the intention of the owner to destroy it in order to replace it with modern cottages. The Court-house is a picturesque, half-timbered building of two stories, with modern wings projecting at right angles at each end. The older portion is all that remains of a larger house, which appears to have been built in the XVth century. The manor belonged to the Crown, and it is said that both Edward I. and Edward III. visited it. The building was in a dilapidated condition, but, having regard to its value, the council put themselves into communication with the owner, and with his approval sent an architect to examine and report upon it. He reported that, though dilapidated, the house was capable of effective repair at a cost of 250*l.*, and of being fitted as three cottages at a further cost of 100*l.* each, without any destruction of the original character of the building. Since the owner was not prepared to part with the freehold the council acquainted him with the report of its architect, and urged upon him the consideration of the alternative. The owner received the communications of the Trust with courtesy, but has not informed the council of his decision in the matter.

It has been decided not to hold a public meeting in connexion with the work of the Trust in London this year, but to hold instead a meeting in Glasgow in the autumn.

PROPOSED NEW BUILDINGS IN LONDON AND SUBURBS.

OFFICES in Aldwych, for General Accident, Fire, and Life Assurance Corporation, Ltd. Messrs. Marler & Marler, surveyors, 176, Sloane-street, S.W.

Extension of premises of Messrs. Jas. Buchanan & Co., distillers, 26, Holborn, E.C., to Nos. 27 and 29.

Partial rebuilding of premises of Messrs. T. Venables & Sons, drapers and furnishers, 103-115, High-street, Whitechapel.

Extensive alterations of premises in Aldgate, for Messrs. Warren & Co., provision importers. Messrs. Vigor & Co., builders, King-street, Poplar.

Rebuilding business premises in High-street, Shoreditch. Messrs. J. Hayden & Sons, builders, Teesdale-street, Hackney-road, N.E.

Buildings in Berkeley-street, W. Messrs. Patman & Fotheringham, builders, Islington.

Hammersmith.—Buildings, Askew-road, by Goldhawk-road, Mr. J. J. Kelf, architect, 213, Hoe-street, Walthamstow; building, Lower Mall, South Side, Golf Balls, Ltd.

Adaptation of Stratford House, W., for Lord Derby (who has just purchased same through Messrs. Loft & Warner, estate agents, 130, Mount-street, W.).

Wesleyan church, Mitcham, Surrey (4,000*l.*). Messrs. Gelder & Kitchen, architects, 76, Low-gate, Hull; Mr. George E. Everitt, builder, 79, Windmill-road, Croydon.

Putney.—Development of new road out of Priory-lane, Mr. J. C. Radford, architect, 223, Upper Richmond-road, Putney; residence, Castello-avenue, Mr. J. Coleman.

Balham.—Vestries, etc., St. Peter's Church, Beechcroft-road, Mr. W. Wallis, builder; additions and workshop at rear, 153 and 155, Balham High-road, Mr. J. Patterton.

Streatham.—Two new roads from Fontaine-road to Streatham High-road, Mr. H. B. Mitchell; residence, Clairview-road, Mr. H. Hann; two houses, Normanhurst-road, Messrs. Treacher & Son, architects, 73, Moorgate-street, E.C.

Springfield, S.W.—Six houses, Messrs. Holloway Brothers, builders, 1, Herondale-avenue, Springfield, S.W.; additions at rear of Holland House laundry, Burmester-road, for Mr. W. Piper.

Residence on site of Gayton Lodge, Wimbledon Park. Messrs. Maple & Co.

Prospective rebuilding, after fire, of Messrs. Wenham & Waters' engineering works, West Croydon.

Extension of Technical Institute, Wimbledon.

Shop and house in Fruen-road, Feltham, for Mr. Songi.

Harrow.—Twelve houses, Eastcote-road, Messrs. Fletcher & Sons; five shops, Pinner-road, Mr. J. Keith; five houses, Vaughan-road, Messrs. Clarke & Co. (estate agents), for Mr. W. Taylor; conversion of Bricklayers' Arms public-house into cottages, Messrs. Benskin & Co.

Wealdstone. — Extension of Radnor-road, Messrs. F. & W. Bettesworth, builders, 9, Strode-road, Willesden Green, N.W.; twelve houses, Woodlands-road, Mr. H. Charlesworth; additions to shop for Messrs. Lexicon, Ltd.; three houses, Mr. E. S. Bates, builder, 57, Barrington-road, Hornsey, N.

Pinner.—Three houses, Cunningham Park, Mr. D. Jones; new road, West End Estate, Mr. A. W. Marshall; four cottages, Canons-lane, Mr. T. Elkington; house, Paines-lane, Messrs. Turner & Day.

Harrow Weald.—Twenty-two houses, Byron-road, Mr. T. Martin.

Proposed extension of tramway depôt, Collindale, N.W. Chief Engineer, Metropolitan Electric Tramways, 4, South-place, E.C.

Adaptation, Lads of the Village public-house, St. Mary Cray, Kent, to post-office, Mr. W. Winburn, builder, Croydon.

Adaptation Adelphi Restaurant, Strand, for Government offices, etc., for Queensland. Sir Horace Toyer, Agent-General, 1, Victoria-street, S.W.

Hornsey.—Eight houses, Redstone-road, Mr. Harry East; fifteen houses, Redstone-road, Mr. John Ferrer, architect, 2, Coleman-street, E.C.; temporary Sunday-school at rear of Moravian church, Messrs. G. Mabey & Co., Upton Manor.

Muswell Hill.—Eighteen houses and one shop, Mr. W. J. Keith, architect, 7, East India-avenue, E.C.; shop and house, Colney Hatch-lane, Messrs. G. W. Smith & Son; one house, 21, Etheldene-avenue, Messrs. W. J. Collins & Son; gymnasium, Messrs. T. D. Steed & Sons, builders, 2A, Langdon-place, Holloway.

Highgate.—House, Stormont-road, alterations and additions to Convent laundry, Messrs. E. Kerry & Sons, builders, 63, High-street, Highgate; six houses, Hornsey Lane-gardens, Mr. J. C. Hill; additions and alterations to "Clovelly," Wood-lane, Mr. M. W. Matts.

Stroud Green, N.—Two houses, Mr. A. William Jones, North Finchley.

Finsbury Park.—Alterations, etc., Beth Works, Dagmar-road. Mr. Alfred Pryke, builder, 74, Lancaster-road, N.

Richmond.—Development of Selwyn Estate, Messrs. Worsfold & Hayward, surveyors, 80, Cannon-street, E.C.; eight houses, Hickey's-grove, Messrs. Brewer, Smith, & Brewer, surveyors, 11, The Green, Richmond; additions to 15, Rosemount-road, Mr. G. Widdowson; business premises, North-road, Mr. W. Vincent, architect, 3, West Park-crescent, Kew Gardens; alterations (removal of side boxes, changing seating arrangements, etc.), to Richmond Theatre; two houses, Mortlake-road, Messrs. Boore & Parker, builders, 15, Station-parade, Richmond.

East Ham.—Extension to Liberal and Labour Club, High-street South, Mr. J. H. Carte, "Knighton," Aldersbrook-road, Ilford; rebuilding Red Lion public-house, High-street South, Mr. J. Johnson; enlargement of business premises, 327 and 329, Green-street, Mr. J. D. Holton, builder, 33, St. Mary's-road, Plaistow, E.

Barking.—Hospital buildings, for District Council. Mr. C. J. Dawson, architect, East-road, Barking.

Stratford.—Additions and alterations to premises of Messrs. Young & Marten, builders' merchants, Romford-road, Mr. P. H. Adams, architect, 65, Leadenhall-street, E.C.; stores, stables, etc., at Essex Works, Martin-street, Mr. W. Stewart.

Canning Town.—Sunday-schools in connexion with Wesleyan church, Malmesbury-road. Messrs. Withers & Meredith, architects, 50, Cannon-street, E.C.

Forest Gate, E.—Alterations and additions to St. James's Schools, St. James-road. Messrs. Newman & Jacques, architects, 2, Fencourt, Fenchurch-street, E.C.

Wimbledon.—Twenty-nine houses, Melrose-avenue, Mr. C. Barwell, "The Elms," Morden, Wimbledon; two houses, Witton-crescent, Mr. J. S. Brocklesby; two houses, Dunmore-road, Mr. T. Eaton, 126, Trinity-road, S.W.; pair of maisonnettes, Durham-road, Mr. D. McNeil; additions to "Montrose," Arthur-road, Messrs. Thomson & Pomeroy, Wimbledon; detached residence, Durham-road, Messrs. Daw, Saville, & Co.; laundry at rear of 23, Cowdrey-road, Mr. R. Green; extension of office, High-street, Messrs. Hampton & Sons, Ltd., estate agents, Wimbledon; shop and showrooms, Warple-road, Messrs. Whitehead Brothers, builders, 21, Hill-road, Wimbledon.

Obituary.

MR. SPENCER STANHOPE.—The late Mr. John Roddam Spencer Stanhope, who died, aged 79 years, a few days ago, passed the latter half of his life in Florence, where he decorated the interior of his villa at Bellosguardo, and, in association with G. F. Bodley, R.A., painted the reredos, of the Crucifixion, for the English church in Via La Marmora, to which he added the tower. Mr. Spencer Stanhope was a pupil of G. F. Watts, and shared in the decoration of the Union, Oxford, and—with Bodley—of the chapel at Marlborough. He was greatly interested in recent work in tempera; of his paintings may be mentioned "Rizpah," "The Waters of Lethe," "The Mill," "I have trodden the wine-press alone," and "Love and the Maiden," one of his earliest contributions to the Grosvenor Gallery.

General Building News.

NEW NAVE, HEXHAM ABBEY CHURCH.—On August 8 was consecrated, by the Bishop of Newcastle, the new nave of Hexham Abbey Church. The work has been carried out from the designs of Mr. Temple Moore, F.R.I.B.A., by Messrs. Holloway Brothers, of London. Mr. C. C. Hodges, architect, of Hexham, has supervised the works, acting under Mr Moore's direction. The choir is well known as one of the finest examples of Early English work in the north of England. The new nave follows the one-aisled plan usual in the churches of the Augustinian Canons, the place of the south aisle being occupied, in complete instances, by the north walk of the cloister. The style adopted is Late Decorated, to accord with the existing remains, namely, the south and west walls to a height of about 15 ft., with the south and west doorways, which were sufficiently sound to enable their complete restoration. The nave arcade consists of six arches, the easternmost lower than the others, as it was here necessary

to pierce one of the tower buttresses. The choir has also been much restored, notably the Ogle Chantry, and the very fine five-seated sedilia. Excavations here, after the removal of the modern boarded floor, revealed the lower courses and foundations of the apse of the earlier Saxon church; eastward of this were discovered traces of a larger and later Norman apse. A shallow basement has been formed, with a trap-door entrance from the choir, so that these very interesting remains may now be seen by visitors. The beautiful traceried panels of the wooden closed choir-screen, which would have completely isolated the nave from the choir, have been hung on hinges so that they may be opened inwards during divine service. The canons' stalls have been restored as nearly as possible to their original condition. The whole of the choir had been much damaged by injudicious restorations made about forty years ago.

MISSION CHURCH, BEDMINSTER.—A mission church is being erected in Beauley-road, in the parish of St. Paul, Bedminster. The building will provide accommodation for 350 people, and the cost is to be about 2,750*l*. The building contract has been let to Mr. T. Weeks, the architects being Messrs. Scammell, Son, & Perkins, and the heating engineers Messrs. Skinner & Board, Stokes Croft.

CHURCH ENLARGEMENT, ILKESTON.—A new north aisle is being built at St. John's Church, Ilkeston, from the plans of the architect, Mr. P. H. Currey. The new aisle will provide over 100 additional sittings, and when the whole building is completed there will be places for 476 worshippers.

CHURCH IMPROVEMENTS, DUNDEE.—A scheme of improvements and redecoration has just been completed at the Ward Chapel, Dundee. The improvements were executed by Mr. John B. Hay, builder, while Messrs. P. & A. Davie have carried out the painter work. The work generally has been done under the direction of Mr. R. Gibson, C.E. and architect.

TRAINING SCHOOL EXTENSION, NETHERTON.—Additions are being made to the Netherton Training School. They comprise a new school-room to accommodate 210 boys, and also a recreation-room for the teaching staff at the school. The work of erecting the building will be entirely carried out by the boys in the institution, under the direction of the skilled foremen. The architects are Messrs. Armstrong & Wright, of Newcastle.

SUNDAY-SCHOOL, KENTISBURY FORD, DEVON.—The Kentisbury Ford Wesleyan Methodists are building premises for a Sunday-school. The building is being erected from plans by Mr. J. Mayne, of Eastdown; Mr. W. H. Treweek, of Combe Martin, is carrying out the masonry work, and Mr. J. Willis, of Combe Martin, the carpentry.

GENERAL HOSPITAL, CALCUTTA.—One of the finest structures hitherto built in Calcutta is the paying patients' block in the General Hospital. From *Indian Engineering* we learn that the building, which was erected from the designs of Mr. W. Banks Gwyther, F.R.I.B.A., is 362 ft. long by 119 ft. wide, comprising a central block and two wings, all of two stories. The floors throughout are of concrete reinforced by expanded metal and covered with marble, the steel joists being protected by reinforced plaster. The plumbers' work was executed under the supervision of Mr. W. Dixon Swinney, the plumbing expert to the Government; the electrical installation was carried out under the direction of Mr. Taylor, the electrical inspector to the Government; and special attention to all sanitary arrangements was given by Colonel Pilgrim, the superintendent of the hospital.

MISSION BUILDINGS, ROATH, CARDIFF.—The new mission buildings in the parish of St. German, Roath, Cardiff, have now been opened for church work. The buildings consist of a large mission-room, gymnasium, etc., kitchen, and large front room for meetings and classes; on the first floor guild-room, workroom, vestry, and chapel to accommodate about 200 persons. The mission was designed by Mr. F. R. Kempson, and will cost over 2,000*l*.

EDINBURGH CORPORATION WASH-HOUSES.—On the 30th ult. the new Corporation wash-houses in Simon-square were opened. The buildings were designed by Mr. Williamson, the City Superintendent of Works, and have been treated externally with red and white free-stone. Although planned for a maximum accommodation of sixty washing stalls, only forty have at present been constructed. The main washing hall measures 80 ft. by 40 ft., and is 23 ft. high; the walls are of white glazed bricks, with roof of steel. The steam boiler-house is situated in the rear of the washing-hall. The cost of the new buildings is a little over 5,000*l*., while the site cost 2,355*l*. A waiting-room, superintendent's-room, and cashtaker's-room adjoin the main building. Situated on the first landing is a room which will be utilised by the children while their mothers are at work, and attached to this room is an attendant's-room, constructed in such a way that she can have full view of the children under her charge.

HOME FOR CRIPPLED CHILDREN, PYRFORD, SURREY.—The Church of England Waifs and Strays Society have opened a home for crippled children at Pyrford. The plans for the new building were prepared by Mr. E. J. May, architect, and a contract was entered into with Messrs. Musselwhite & Sapp, Basingstoke.

THE WHITWORTH INSTITUTE, MANCHESTER.—The opening has just taken place of the new buildings of the Manchester Whitworth Institute, which comprise a picture-gallery, a sculpture-gallery, a lecture-hall, and a Council-chamber, have been opened. The architects of the work were Messrs. J. W. Beaumont and W. Beaumont.

PROPOSED ENLARGEMENT OF THE DISTRICT COUNCIL'S OFFICES, TIPTON.—The Tipton District Council have adopted a scheme, prepared by their Surveyor, for the enlargement of their offices. It provides for a strong-room in the basement, new offices, a committee-room upstairs, etc., and the cost is estimated at 1,000*l*.

Stained Glass & Decoration.

CASTLETHORPE CHURCH, BUCKS.—A three-light window has just been completed in this church by the addition of the centre and the remaining side lights. In the centre light is depicted the Virgin Mary with the Holy Child, while in the other one St. Dorothy, opposite St. Agnes (put in several years ago). The work has been carried out by Messrs. Percy Bacon & Brothers, of Newman-street, W.

Sanitary and Engineering News.

IMPROVEMENTS IN BURNTISLAND WATER SUPPLY.—The Town Council of Burntisland have for some time been considering a proposal for improving the domestic water supply of the burgh, and at a special meeting of the Council it was resolved to proceed with the first instalment of a scheme prepared by Mr. J. A. Waddell, Burgh Surveyor. As the quantity of water available is beyond the present requirements of the inhabitants, it is proposed now to allow only the purest of the streams from the gathering ground to flow into the storage reservoir at Cullalo, and to so direct the others that they will be excluded from the domestic supply. The whole scheme will cost about 3,000*l*. A further proposal by the Council to lay a second 8-in. pipe from the reservoir at Cullalo to the burgh to deliver an extra 340,000 gallons, at a cost of something like 4,000*l*.

BREAKWATER, SENNEN COVE, CORNWALL.—A new breakwater is in course of erection at Sennen Cove. Mr. Douglas, the Engineer to the Trinity Brethren, designed the structure, which has a total length of 400 ft. The Commissioners accepted the tender of Mr. Arthur Carkeek, of 3,839*l*. 11s. 6d.

NEW BRIDGE, BARROW.—The new Walney Bridge, which will connect the town of Barrow with the Isle of Walney, was opened on the 30th ult. The structure consists of nine spans, eight of which are fixed, while the other is the opening to permit of the passage of vessels up or down channel. The width between the fixed spans varies from 82 ft. 8 in. to 117 ft. 10 in., while the opening span is 136 ft., but the dolphins which are built upon each side to protect the bridge and floating traffic reduce the width of passage to 120 ft. The bridge is 1,123 ft. long and 50 ft. wide, has a carriageway of 31 ft. 4 in., on which two sets of tram lines are laid, with the live-wire standards running along the centre. The parapets are 9 ft. 4 in. wide. The girders rest upon cylinders, which in turn rest upon piers sunk to a depth sufficient to withstand the great weight. The late Sir Benjamin Baker was responsible for the designs, and the contract was let to Sir William Arrol & Co., contractors, of Glasgow, the price being 87,000*l*.

DRAINAGE IN WESTMINSTER.—In his annual report, which has just been issued, the Medical Officer of Health for Westminster, Dr. Francis J. Allan, referring to drainage, etc., says that 621 sets of plans were examined during 1907. Five hundred and seven of these resulted from notices served by the Public Health Department, and 114 were plans of new buildings or reconstructions, the drainage of which is under the supervision of the City Engineer, with the exception of such matters as come under the Public Health Act and by-laws made thereunder in respect of water-closets, water supply, ventilation, etc. In 151 instances the plans had to be amended, and sanction was refused altogether with regard to three of them. Failure to send in plans as required by law occurred in forty instances. Infringement of the by-laws in connexion with the erection of buildings occurred in twenty-five instances. Proceedings against two persons offending were taken in the following instances:—(1) Failure to give notice of intention to construct water-closet and fitting a defective soil pipe, fined 10s. and 2s. costs; (2) failure to deposit plans, fined 10s. and 2s. costs. In the other instances the persons responsible were cautioned by the Public Health Committee that further proceedings would be taken on subsequent neglect. During the year 1,426 tests were applied to 1,365 drains, soil pipes, etc., of which 336 with smoke or water were carried out under the supervision of the sanitary inspectors by the men of the disinfecting staff. The routine is to test a drain first by means of chemicals, and, if necessary, subsequently with smoke, air, or water. After reconstruction drains below ground are tested with water, pipes above ground with smoke or air. The numbers of each test employed were:—Chemical, 509; water, 576; smoke, 239; air, 102.

CARLISLE SEWAGE WORKS.—On the 28th ult. the sewage disposal works which have been put down upon the Willow Holme for the purpose of dealing with the entire sewage of this city on the bacteriological principle, and doing away with the old method of disposal by delivery into the River Eden were inaugurated. The chief contractor for the works was Mr. Mackay, of Dundee and Derby, and the subcontractors were Messrs. Gwynne, engineers, London, who put in the pumps, etc.; Messrs. S. S. Stott & Co., engineers, Haslingden, near Manchester, who were responsible for the screening machinery and elevators; the British Insulated and Helsby Cable Company, Ltd., of Prescott, Lancashire, who supplied the cable; Messrs. John H. Reid & Sons, joiners; Messrs. R. M. Ormerod & Son, plasterers; Mr. Hewitson, slater; Mr. Wilson, plumber; and Mr. S. Allan, painter. The contracts were let for 46,006*l*. 19s. 4d. Mr. H. C. Marks, the City Surveyor, was the author of the scheme.

Miscellaneous.

WORKING-CLASS DWELLINGS IN CHELSEA.—Last year Earl Cadogan offered free of cost half an acre of freehold land on the south side of Grove Cottages, Manor-street, to the Chelsea Borough Council for the erection of working-class dwellings for persons whose wages do not exceed 25s. a week, and, subject to the Finance Committee submitting the necessary financial estimate, this offer was accepted. Reliable figures being required by the Finance Committee to aid them in arriving at a decision on the matter, plans and estimates were invited from six architects for dealing with the site. In view, however, of the contemplated erection of working-class dwellings in the vicinity of Marlborough-square, the consideration of the matter has from time to time been adjourned, but Earl Cadogan is now anxious to receive a definite reply. The Public Health Committee recommend that the Council proceed with the erection of the dwellings on the site, and that the Finance Committee be requested to submit an estimate for a scheme not to exceed a cost of 21,000*l*.

GOVERNMENT WORKS.—Replying to a question in the House of Commons on July 30, Mr. Asquith said the contract for the naval works at Roslyn would be placed as soon as possible. Provision would be made for a premium to be paid for completion before the specified time.—Mr. T. Wilson (Lancashire) asked, in view of the amount of unemployment in the building trade, if all new Government buildings and alterations and additions to existing buildings could be put in hand as soon as possible.—Mr. Harcourt, First Commissioner of Works, replied that he was as much interested as anyone in pressing on the works referred to and no time would be lost in doing so.—Mr. Guinness inquired on what works Messrs. C. Corderoy & Co. had been employed during the last five years by the Admiralty as quantity surveyors: on what basis payment had been made to this and other firms; and whether the Admiralty had considered the question of employing their own staff to carry out the work.—Mr. McKenna only replied to the first question. He said the works undertaken by the firm named during the five years ending March 31, 1908, were as follows:—Malta, docks and breakwater; Gibraltar Dockyard, harbour, commercial work, dockyard extension, and coaling facilities; Dover, harbour; Hong Kong, dockyard extension and coaling facilities; Cape of Good Hope, dockyard extension; Chatham, new dock, naval barracks, hospital, slaughter-house, Commander-in-Chief's residence, new river wall; Pembroke, jetty;

Sheerness, depôt for torpedo-boat destroyers and drainage; West India Docks, new offices; Deptford, seamen's clothing store; Greenwich, laboratories; Deal, additions to sergeants' mess; Horsea Island, torpedo range; Haulborline, coaling jetty; Dartmouth, Royal Naval College; Devonport, dockyard extension, naval barracks, electrical generating-station, etc., gunnery school, magazines, coaling; Plymouth, hospital, wards for lunatics.

A RELIC OF EXETER HALL.—A portion of the Strand front of Exeter Hall has been secured for re-erection, as an architectural specimen, at the London County Council's School of Building, Brixton. The narrow front, designed by J. P. Gandy-Deering, 1829, consisted of a lofty portico, carrying an attic story and flanked with two Corinthian columns and pilasters.

CALF OF MAN.—At a projected sale by auction on July 29 the property was withdrawn after a bid of 3,000*l*. The island, which has an area of about one and a half square miles, contains 140 acres under cultivation. The summit of the island rises to an altitude of 500 ft., and on the west side the steep cliffs are 400 ft. high. It appertains to the parish of Kirk Christ Rushen, in the main island, and is separated from Spanish Head by a rocky channel 800 yds. in width.

DUKE OF YORK'S COLUMN, WATERLOO-PLACE.—Mr. W. Larkins, the well-known steeplejack, and his assistants are engaged upon the repointing of the stonework. The Tuscan column, designed by B. Dean Wyatt, was constructed by Nowell, in 1830-3, of Aberdeenshire granite, the shaft of red and the pedestal of grey Peterhead, with an unpolished fine-axed surface; the spiral stair, having 168 steps, and the newel were cut from solid blocks. The naked shaft, modelled after Trajan's Column, and having a lower diameter of 11 ft. 7½ in. with a slight entasis, is 123 ft. 6 in. high; it rests upon a concrete pyramidal foundation, 53 ft. square at the base. The bronze statue, 13 ft. 6 in. high, of Frederick, Duke of York and Albany, in his Garter robes, sculptured by Sir Richard Westmacott, R.A., was raised on April 8, 1834. To the building fund of some 25,000*l*. the Army subscribed one day's pay, and Soane, it is said, contributed 1,000*l*.

HAMPSTEAD GARDEN SUBURB TRUST.—At the annual meeting held a few days since, under the presidency of Mr. Alfred Lyttelton, K.C., M.P., it was stated that the development proceeds so rapidly that the central square, in relation to which the entire building scheme is grouped, is to be laid out shortly, and that the designs of the central church and the Free Church are entrusted to Mr. Lutyens. The Improved Industrial Dwellings Company have taken two areas for the erection of workmen's cottages, and a group of residential flats for working ladies; the Hampstead Tenants, Ltd., a co-partnership society, have leased a large portion of the Trust's land whereon they already have sixty-three houses occupied, with 264 in course of being built or planned. Roads to the length of one and a half miles are laid out, and two miles more are arranged for. The roads, whilst somewhat narrower than would otherwise be sanctioned, are, in terms of the Trust's Act of 1906, plotted with special regard to restricting the number of houses per acre and to the preservation of green strips, hedges, and open spaces. Mr. Lyttelton paid a well-merited tribute to the unremitting work of the honorary manageress, Mrs. Barnett, to whom the success of the undertaking is so largely due.

WELSH ANCIENT AND HISTORICAL MONUMENTS.—A Royal Commission, of which Sir John Rhys, Principal of Jesus College, Oxford, and Professor of Celtic in that University, is chairman, has been appointed to make an inventory of the ancient and historical monuments and constructions connected with or illustrative of the contemporary culture, civilisation, and conditions of life of the Welsh people from the earliest times, and to specify those which seem to be most worthy of preservation. The other members of the Commission are Professors R. C. Bosanquet, Professor of Classical Archæology in Liverpool University, and Anwyl, Professor of Celtic in the University College of Wales; Mr. E. Vincent Evans, and Alderman R. Hughes, J.P., of Cardiff, Secretary and President of the Honourable and the Cardiff Cymmrodorion Societies; and Colonel W. L. Morgan, R.E., late of the Ordnance Survey, author of "An Archæological Survey of West Gower."

ORDNANCE SURVEY, 1907-8.—In his review for the year ended on March 31, Colonel Hellard, Director-General, reports that of the 1-in. scale maps 7,997 square miles were revised and drawn, and 7,949 square miles engraved; the coloured 1-in. map is completed for the whole of Ireland, and several sheets of the recently-resumed ½-in. map of Scotland are ready. The fieldwork of the first general revision of the original cadastral survey on the 1-2,500 scale is completed, and the Survey has published the revised plans—some 100 square miles in Pembroke and Cornwall excepted; the similar work of the second general revision is being carried out in Hampshire, Sussex, Lancashire, Yorkshire, and Cheshire; the resurvey to the same scale of Ireland makes rapid progress, the surveyors having dealt with nearly 1,044,000 acres, embracing 12,386 acres of the county of Dublin. The sales of maps yielded a net return of 22,488*l*., being a net decrease of 364*l*., and as many as 70,770 maps, an advance of 100 per cent., were supplied at reduced rates to schools during the twelve months under review. Whilst the annual gross value of sales during the past two years of small-scale maps to the trade through Mr. T. Fisher Unwin's agency is larger than it was before, the actual gain to the State is slightly reduced by reason of the higher discount allowed.

NEWCASTLE CITY ENGINEER'S REPORT.—The City Engineer and Town Surveyor for the Newcastle Corporation, Mr. C. R. S. Kirkpatrick, has issued his annual report for the year ending March 31, 1908, giving details of the work done and the expenditure of his department for the Town Improvement and Streets Committee, the Sanitary Committee, the Town Moor and Parks Committee, the Tramways Committee, and the Trade and Commerce Committee. The report states that the estimated sewering works have all been carried out. The expenditure has been 4,228*l*. Dealing with road works the report states that about twenty-four and a half miles of macadam roads were sprayed with tar as an experiment, with the object of reducing the cost of watering and prolonging the life of the roads. The wet summer prevented the best results being obtained, but, notwithstanding, there was a saving of 568*l*., after all expenses of tarring had been paid. The amount expended on snow clearing during the year has been 833*l*. Among the more important works that were being carried out was the Market-street extension, on which 5,175*l*. has been spent. The revision of the Ordnance Survey of certain portions of the city has been completed at a cost of 3,430*l*. The work of wood-paving of various thoroughfares has accounted for 4,482*l*. The expenditure on the Ouseburn Valley works on concrete foundations, etc., during the past year was 9,360*l*. At the Benwell Destructor various works have been carried out at a cost of 9,942*l*. The cost of the work done in new streets, under Council and other orders (and recoverable from property owners), has been 12,766*l*. In addition, 14,865*l*. has been expended on work done for gas, water, and other companies, making a total of 27,631*l*. for the year, exclusive of 6,427*l*. for tramway track maintenance and renewals. As regards the quay extension, east of the Ouseburn, the construction of the new berth (360 ft. long) has been continued, but progress of the work has been seriously hindered by not getting possession of the necessary property. The cost during the year (exclusive of land) has been 9,806*l*., making a total cost to date (exclusive of land) of 12,126*l*. The construction of the single-story shed near the Milk Market was commenced, but a considerable quantity of pipe and cable diversions has been necessary before proceeding with the sheds, and progress is slow. The expenditure during the past year has been 4,567*l*., making a total to date of 10,058*l*.

ST. PETER'S CHURCH, MANCHESTER.—A cross is to be erected on the site where this church stood. It will be 33 ft. in height, and has been designed by Mr. Temple Moore.

PROPOSED IMPROVEMENTS, DERBY.—Mr. R. H. Bicknell, M.Inst.C.E., Local Government Board Inspector, recently held an inquiry at the Guildhall, Derby, into the application of the Derby Town Council to borrow 7,500*l*. for the purpose of the electricity undertaking, 15,017*l*. for the purpose of street widening on the London-road, and 8,416*l*. for the purchase of 23 acres of land at Normanton for a recreation-ground. The Borough Electrical Engineer, Mr. Wilmshurst, stated that it was proposed to apportion 5,750*l*. of the 7,500*l*. asked for mains and services and the remainder for motors, transformers, radiators, and flame arc lamps, and the other proposals were explained in detail by the Town Clerk.

LIABILITY FOR ACCIDENTS IN BUILDING TRADES IN AUSTRIA.—A judgment lately passed by the High Court in Vienna solves in a satisfactory manner the question raised about two years ago in Austria as to liability for accidents in building trades. By its finding, the High Court has recognised, in complete agreement with the plaintiffs, that "the statute of July 20, 1894, clearly states that only three of the so-called accessory trades in building—stonemasons, well-sinkers, and iron fitters—are wholly protected by the liability for accidents' clause; that the management of all other building trades are liable only for the workmen actually engaged in the performance of their duties on the building itself, to the exclusion of the men employed in the workshops and yards." Of the previous history of this important question we may mention that up to the year 1906 the Workmen's Insurance Companies, as well as the magistrates and Home Office, considered liability to extend only to actual building operations on the site. Suddenly, about the middle of that year, in a case referring to a firm of scaffold builders, the High Court found, in opposition to sixteen years' practice, that "the liability for accidents extends to all persons employed in all building trades." The insurance companies took advantage of this single instance to create a precedent, declared all accessory building trades in the widest sense to be liable for insurance, and increased their takings three-fold. In this they were seconded by the magistrates and Home Office. A few of the intimidated contractors, however, recently laid the question before a full bench of the High Court, and through its finding have been able to recover the premiums wrongfully claimed by the insurance companies since 1906, together with the interest thereon.

BRITISH CEMENT IN MADEIRA.—Capt. Boyle, H.M. Consul in Madeira, writes that the import of cement into the island is increasing, and that this is particularly noticeable as regards British cement, which (he adds) is no doubt the best. The other countries which also supply are Germany, Belgium, and the Netherlands, whilst some also comes from Portugal. It is all imported in barrels weighing 400 lb. The duty amounts to about 4s. per barrel. The cost per barrel landed in Madeira is about 8s. 6d. for British and German, 7s. 6d. for Belgian and Dutch, and 9s. for Portuguese. The imports of British in 1905 amounted to 1,747 barrels, in 1906 to 2,249 barrels, and in 1907 to 4,404 barrels.

Patents of the Week.

APPLICATIONS PUBLISHED.*

20,991 of 1907.—P. H. MARRIOTT and J. C. RICHMOND: *Fastener for Doors and Windows.*
This relates to a window or door fastener, comprising the combination with a split nut, the respective parts of which are adapted to be secured one to each of the window sashes, or one to the door, and the other to the door frame; of a screw device adapted to enter and engage with the split nut, and the screw device being arranged to act as a wedge and force the parts of the split nut apart when screwed home.

22,409 of 1907.—F. J. J. GIBBONS: *Locks.*
This relates to a door fastening, comprising the combination of a relatively massive bolt operated by a handle and shut by a pivoted lever, the extremity of which engages in the shut position with a shoulder formed on the bolt, and a key-operated slide for disengaging the lever from the bolt; in which the key-operated slide has a two-step movement in either direction, one of which steps must be effected by a special master key; and a form of construction in which the ordinary key cannot be withdrawn until the lock has been shot and the detaining lever displaced into the locking position.

25,155 of 1907.—A. SOLARI: *Devices for Preventing the Diffusion of Soot from Chimneys.*
This relates to a device for preventing the diffusion of soot, consisting in mounting in the chimney a helical baffle which is adapted to be rotated by the impact of smoke upon the blades thereof, whereby the smoke is freely permitted to escape, but the matter suspended therein is forced by the rotational movement of the baffle to descend toward the lower part of the chimney, where it is collected.

6,924 of 1908.—F. BURCHARTZ: *Floors and Ceilings.*
This relates to a floor or ceiling comprising blocks, each of which is composed of tubular sections, the end surfaces of juxtaposed sections abutting together so that the tubular cavities of the several sections register with one another; each section of a block being provided with a flange on the side nearest to the centre of the block, and the ends of the flanges of juxtaposed sections abutting against one another, so as to together form a closure for the bottom of a central space between the several sections, and each section being provided with a flange at the side farthest from the centre of the block, and the ends of the flanges of juxtaposed sections abutting against one another so as to together form, in conjunction with the corresponding flanges of adjacent blocks, a closure for the bottom of a continuous channel surrounding the block. Binding material is employed as a filling for the

* All these applications are in the stage in which opposition to the grant of patents upon them can be made.

PATENTS.—*Continued on page* 195.

List of Competitions, Contracts, etc.

For some Contracts still open, but not included in this List, see previous issues. Those with an asterisk (*) are advertised in this Number: Competition, iv.; Contracts, iv. vi. viii. x.; Public Appointment, —; Auction Sales, xxvi.

Certain conditions, beyond those given in the following information, are imposed in some cases, such as: the advertisers do not bind themselves to accept the lowest or any tender; that a fair wages clause shall be observed; that no allowance will be made for tenders; and that deposits are returned on receipt of a bonâ-fide tender unless stated to the contrary.

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.

***** It must be understood that the following paragraphs are printed as news, and not as advertisements: and that while every endeavour is made to ensure accuracy, we cannot be responsible for errors that *may* occur.**

Competitions.

OCTOBER 7.—**Inverness.**—BOAT SHELTER.—Inverness Harbour Trustees invite engineers to submit plans for the construction of a boat shelter at the Harbour at Inverness, the total cost of the scheme not to exceed 10,000*l*. Mr. Kenneth Macdonald, Clerk to the Harbour Trustees Town House, Inverness.

* OCTOBER 31. — **Romford.** — NEW SCHOOL. — The Governors of the County High School, Romford, invite competitive designs for a new school at Romford, Essex. See advertisement in this issue for further particulars.

NO DATE. — **Bothwell.** — NEW PARISH COUNCIL CHAMBERS.—The P.C. of Bothwell are prepared to receive competitive plans in connexion with the erection of Council Chambers in Bellshill. Plan of the selected site with the conditions of competition may be obtained on application to Mr. Robert Anderson, Inspector and Clerk, P.C. Chambers, Bellshill, on payment of 1*l*. 1s. The probable cost of the buildings is 2,000*l*.

NO DATE. — **Littlehampton.** — DRAINAGE.—Littlehampton U.D.C. invite engineers to submit plans and sections with estimate of cost of a scheme of drainage of part of the District of Littlehampton (including the parish of Wick and the hamlet of Toddington). Instructions and conditions will be forwarded on application to Mr. A. Shelley, Clerk to the Council, Town Offices, Littlehampton.

Contracts.

BUILDING.

AUGUST 14.—**Neath, etc.**—SCHOOLS.—Glamorgan C.C. invite tenders for (1) alterations and additions to the Skewen Council School, near Neath; (2) alterations and additions to the Cadle Council School, Fforestfach, near Swansea. Plans, etc., of Work No. 1 may be seen, and copies of the bill of quantities obtained, at the Neath Police-station, and of Work No. 2 at the office of Mr. J. Jones Lewis, solicitor, 7, Rutland-street, Swansea. The plans, etc., for both the works may be seen or obtained at offices of Mr. T. Mansel Franklen, Clerk of the C.C., Glamorgan County Offices, Westgate-street, Cardiff.

AUGUST 15.—**Leeds.**—STORES.—Tenders are invited for the whole of the works required in the erection of new stores at the Kirkstall-road Depôt. Applications to be sent to the architects, Messrs. Connon & Chorley, 16, Park-place, Leeds.

AUGUST 17. — **Deerpark.** — CREAMERY.—Deerpark Co-operative Creamery, Ltd., invite tenders for the building of an auxiliary creamery, to be situated on Mr. Robert Wilson's Farm, Deerpark, Glenarm. Plans, etc., may be seen at Mr. R. Wilson's house

AUGUST 17.—**Greenock.**—ADDITIONS, ETC.—Greenock (Burgh) School Board invite tenders for (1) mason, (2) joiner, (3) slater, (4) plumber, (5) plaster, (6) painter, (7) casement windows, required in connexion with the erection of addition and alteration to Greenock Academy, according to plans by Messrs. Boston, Menzies, & Morton, architects, Greenock. Schedules of quantities, etc., can be obtained on application to Mr. A. F. Niven, Clerk of Board. Burgh School Board Offices, Municipal Buildings, Greenock, on payment of a deposit of 10s. for each schedule.

AUGUST 17. — **Lochgelly.** — CATTLE SHEDS.—Estimates are wanted for the brick, joiner, plumber, plaster, slater, and steel works of proposed cattle sheds at West End of Lochgelly for Messrs. The Equitable Co-operative Society, Ltd. there. Plans, etc., may be seen on application to Mr. James T. Scobie, architect, Dunfermline and Lochgelly, who will also furnish schedules of measurements to intending contractors.

AUGUST 17.—**New Brancepeth.**—COTTAGES.—Ten cottages for the New Brancepeth Co-operative Society. Plans, etc., may be seen at the Society's office. Mr. T. T. Shevels, Secretary.

AUGUST 17.—**Penrhiwceiber.**—VILLA.—Erection of a villa at Penrhiwceiber for Mr. Ivor Davies. Drawings, etc., may be seen at office of Mr. J. Llewellin Smith, M.S.A., architect, Aberdare.

AUGUST 17.—**Salford.**—WALL.—Salford Electricity Committee invite tenders for pointing buildings and pulling down and rebuilding a short length of wall at the Frederick-road Electric Mains Depôt. Specifications, etc., may be obtained from the Borough Engineer, Town Hall, Salford.

AUGUST 17.—**Tantobie.**—HOUSES.—Tantobie Co-operative Society, Ltd., invite tenders for the erection and completion of twenty-two houses and street-making at Tantobie, R.S.O., Co. Durham. Drawings, etc., may be seen, and forms of tender and quantities obtained, at the Architect's Office, 22, Durham-road, Blackhill.

AUGUST 18.—**Portsmouth.**—URINAL.—Constructing, etc., an eight-stall urinal, upon a site adjacent to Copnor Bridge, in the Borough of Portsmouth. The specification, etc., may be seen, and a form of tender obtained, at the Borough Engineer's Offices at the Town Hall.

AUGUST 19.—**Norden.**—FILTER-HOUSE.—Heywood and Middleton Water Board invite tenders for the construction and erection of a mechanical filter-house, near Clay-lane Reservoir, Norden. Drawings, etc., may be seen, and quantities, etc., obtained, on application at the offices of Messrs. James Diggle & Son, civil engineers, Hind Hill-street, Heywood, Lancashire, on payment of a sum of 2*l*.

AUGUST 19.—**York.**—HOUSES.—The erection of four pairs of semi-detached houses on Holgate Gardens Estate, York. Plans may be seen, also further particulars, etc., may be obtained from Mr. John C. Procter, A.R.I.B.A., Cabinet-chambers, Basinghall-street, Leeds.

AUGUST 20.—**Easter Coltfield.**—ALTERATIONS.—Mason, carpenter, slater, plumber, plaster, painter, and glazier works of alterations and additions to cottage at Easter Coltfield, Milton Brodie Estate. Plans, etc., may be seen with Mr. Charles C. Doig, architect, Elgin.

AUGUST 20.—**Felling.**—CLUB.—Workman's Club, Felling. Names to be submitted to Mr. George Bell, quantity surveyor, Market-street, Newcastle.

AUGUST 20.—**Rochester.**—REPAIRS.—The Trustees of Watts's Charity, Rochester, invite tenders for repairs and renewals of the stonework of the front and end elevations of the new Almshouses, Maidstone-road, Rochester. Particulars, etc., can be obtained from Mr. J. W. Nash, 237, High-street, Rochester, the Trustees' Surveyor.

AUGUST 22.—**Aberdeen.**—BRIDGE, PORT ERROLL.—The Ellon District Committee invite estimates for the mason work, etc., in connexion with the reconstruction and widening of the bridge at Port Erroll, in the Parish of Cruden. Plans, etc., may be seen at the Kilmarnock Arms Hotel, Port Erroll, or with Mr. Wm. Davidson, architect, Ellon.

AUGUST 22.—**Carlyon.**—CATTLE RUN.—Erection of a cattle run at Carlyon, in the Parish of Kea, in the occupation of Mr. Samuel Tretheway. Plans, etc., now at the Farmhouse at Carlyon.

AUGUST 22. — **Perth.** — CITY HALL.—The T.C. of Perth invite contractors to tender for the following works in connexion with the erection of Perth City Hall, viz.:—(1) Mason work; (2) carpenter and joiner work; (3) steel and iron work; (4) plumber work; (5) plaster work; (6) glazier work. Plans may be seen at the office of Messrs. Stephenson & Scott, measurers, 38, Tay-street, Perth. Schedules of quantities may now be obtained from the Town Clerk, Perth, on payment of deposits of 1*l*. 1s. for each of Works Nos. 1, 2, and 3, and 10s. 6d. for each of Works Nos. 4, 5, and 6.

AUGUST 24.—**Harpurhey, Manchester.**—BATHS AND WASH-HOUSES.—The Baths and Wash-houses Committee invite tenders for the erection of Public Baths and Wash-houses in Rochdale-road, Harpurhey. Drawings may be seen, and specification, etc., obtained, at the office of the City Architect, Town Hall, upon payment of 3*l*. 3s. for each set of quantities (three). All cheques or postal orders are to be made payable to the Corporation of Manchester.

AUGUST 24. — **Newry.** — SHED, ETC. — The Great Northern Railway Company (Ireland) invite tenders for goods shed, 80 ft. by 25 ft., of timber and slated roof, Edward-street Station, Newry; three-roomed gate cottage, near Fintona Junction; four-roomed gate cottage, near Banbridge. Specifications, etc., at the office of Mr. W. H. Mills, Engineer-in-Chief, Amiens-street Terminus, Dublin, or copies of them at the office of the District Engineer, Belfast, and can obtain at the said offices forms of tender on payment of 1s. each (not returnable).

AUGUST 24. — **Uxbridge.** — ALTERATIONS, ETC., TO FIRE-STATION.—Uxbridge U.D.C. invite tenders for works of alteration and repair to their new fire engine and escape station, Cricket Field-road, Uxbridge. Specification, etc., to be obtained from the Council's Surveyor, Mr. William L. Eves, 54, High-street, Uxbridge.

AUGUST 24. — **Uxbridge.** — REPAIRS TO COUNCIL CHAMBER.—Uxbridge U.D.C. invite tenders for alterations and repairs to Council Chamber, the Market House, Uxbridge. Specification to be obtained of the Council's Surveyor, Mr. William L. Eves, 54, High-street, Uxbridge.

AUGUST 24.—**Widnes.**—SCHOOL WORKS.—Widnes Education Committee Sites and Buildings Committee invite tenders for (1) erection of two fire emergency exits at the West Bank Council Schools; (2) alteration of the outer doors at the three Council schools. Specifications can be seen at offices of Mr. G. H. Danby, Secretary, Town Hall, Widnes.

AUGUST 25.—**Tattingstone, Samford.**—WATER TOWER.—Tenders are invited for the erection of a water tower and provision of water tanks at the Workhouse, Tattingstone. The plans, etc., can be obtained on application to Mr. H. J. Wright, architect, 4, Museum-street, Ipswich.

AUGUST 25.—**Wardley.**—SCHOOL ENLARGEMENT.—The enlargement of Wardley Council School. Plan, etc., may be seen at the office of Mr. H. Miller, architect, Council Buildings, Felling, and bills of quantities may be obtained on application to Mr. George Bell, quantity surveyor, Market-street, Newcastle-on-Tyne.

AUGUST 27.—**Longhduff.**—CHURCH.—The erection of a new church at Loughduff, Co. Cavan, for the Rev. T. O'Reilly, P.P. Plans, etc., can be seen at the office of the architect, Mr. Thomas F. McNamara, 50, Dawson-street, Dublin.

AUGUST 28.—**Pontardawe.**—REBUILDING, ETC.—Rebuilding of (1) the Cross Inn, Pontardawe, together with stables; (2) the Dillwyn Arms, Pontardawe, for Mr. E. Evans, Bevan, Neath. Plans, etc., may be seen, and bill of quantities obtained, at the offices of Mr. J. Cook Rees, architect, Parade-chambers, Neath.

* AUGUST 31.—**Coventry.**—CANAL QUAY WALL.—The Gas Committee of the Coventry Corporation invite tenders for a canal quay wall. See advertisement in this issue for further particulars.

AUGUST 31.—**Derby.**—SCHOOL.—Derby Education Committee invite tenders for the erection of a new school on a site on the Kedleston-road. Plans, etc., may be seen, and schedules, etc., may be obtained, on application to Mr. C. B. Sherwin, 15, St. James'-street, Derby. The sum of 1*l*. 1s. will be charged for the schedule of quantities.

* AUGUST 31.—**East Ham.**—WORKSHOPS, ETC.—The East Ham Higher Education Committee invite tenders for erection of workshops, etc. See advertisement in this issue for further particulars.

* AUGUST 31. — **Ringwood.** — RECONSTRUCTION OF BRIDGES.—The Southampton C.C. invite tenders for partial reconstruction of Treening four-arch bridge and Scutts one-arch bridge across River Avon, near Ringwood. See advertisement in this issue for further particulars.

SEPTEMBER 1. — **Cradley Heath.** — LIBRARY.—Rowley Regis U.D.C. invite tenders for the erection of Library in front of Corngreaves Old School, Spinner's End, Cradley Heath. Plans, etc., prepared by Messrs. Wills & Anderson, the Council's Architects, may be seen at the Council's Offices, Old Hill. Quantities may be obtained at the same place on payment of 1*l*.

SEPTEMBER 4.—**Cork.**—SANATORIUM.—The County of Cork Joint Hospital Board invite tenders for the construction of a sanatorium for consumptives at Streamhill, Doneraile, Co. Cork, in accordance with plans, etc., prepared by Messrs. W. H. Hill & R. Evans. Plans, etc., may be inspected daily, at 28 and 53, South-mall. Quantities will be supplied on payment of 1*l*. 1s.

SEPTEMBER 8.—**Shotton, Hawarden.**—SCHOOL.—Flintshire Education Committee invite tenders for the erection of a new Council school to accommodate 500 scholars at Shotton, in the Parish of Hawarden, in the County of Flint. Plans, etc., prepared by the County Surveyor, Mr. Samuel Evans, can be seen at his office, County Buildings, Mold. Bill of quantities, etc., can be obtained on payment of a sum of 2*l*. 2s.

SEPTEMBER 8.—**Spaxton.**—CHURCH REPARATION.—The Rector, Churchwardens, and Reparation Committee of Church of St. Margaret, Spaxton, invite tenders for the necessary works of structural reparation to the exterior of the fabric of the church. Specifications etc., may be inspected at the offices of the architects, Messrs. Cottam & Samson, 43, High-street, Bridgwater, and 1, Hammet-street, Taunton.

* SEPTEMBER 9.—**Letchworth.**—SCHOOL.—The Herts C.C. Education Committee invite tenders for new County Council School at Letchworth Garden City. See advertisement in this issue for further particulars.

* SEPTEMBER 14. — **Farnborough.** — CHILDREN'S HOME.—The Guardians of the Bromley Union invite tenders for a children's home at their Workhouse, Farnborough, Kent. See advertisement in this issue for further particulars.

NO DATE. — **Bacup.** — SCHOOL. — The erection of Northern Council School, Bacup. Names to the architects, Messrs. S. Butterworth & Duncan, F.R.I.B.A., Rochdale, and a list of the branches for which contractors desire to tender.

NO DATE.—**Belfast.**—VILLA.—Building a villa on Donegall-road, Belfast. Plans, etc., can be obtained upon application at offices of Mr. Frank J. M'Cann, C.E., architect, 102, Donegall-street, Belfast.

NO DATE.—**Belfast.**—VILLAS.—Building and completing a pair of semi-detached villas on Ravenhill-road, Belfast, for Mr. W. E. Bourke, Rosemary-street, Belfast. Plans, etc., can be obtained upon application at office of Mr. Frank J. M'Cann, C.E., architect, 102, Donegall-street, Belfast.

NO DATE. — **Birstall.** — COTTAGES.—The Committee of the Birstall Industrial Co-operative Society invite tenders for sixteen cottages on a site adjoining Leylands-road, Birstall. Bills of quantities may be obtained on payment of a deposit of 1*l*. 1s. on application to the architect, Mr. R. Worcester, Co-

operative Wholesale Society, Ltd., 1, Balloon-street, Manchester.

No DATE.—**Frizinghall.**—WAREHOUSE.—Works required in the erection of a wool warehouse at Bolton Hall-road, Frizinghall. Names and addresses to Mr. Abm. Sharp, architect, Market street, Bradford.

No DATE. — **Harome.** — CHAPEL. — Erection of a Wesleyan Chapel at Harome, near Helmsley. Messrs. W. J. Morley & Sons, architects, 269, Swan-arcade, Bradford.

No DATE.—**Resolven.**—HOUSES.—Erection of two houses at Glyn Neath-road, Resolven, for Mr. Lewis Lewis, Brondeg House, Resolven. Plans, etc., may be had on application to the above named.

ENGINEERING, IRON, AND STEEL.

AUGUST 17.—**Chorley.**—SLUDGE PRESS.—The Chorley Corporation invite tenders for the supply of an additional sludge press at their Main Sewage Works, Common Bank, Chorley. Further information may be obtained from the Borough Surveyor, Town Hall, or the Manager at the sewage Works.

AUGUST 17. — **Ilford.** — ELECTRICITY WORKS.—Ilford U.D.C. invite tenders for extensions to their Electricity Works, Ley-street, Ilford. Drawings, etc., may be obtained at the office of Mr. H. Shaw, M.Inst.C.E., Town Hall, Ilford, on payment of a deposit of 2l. 2s.

AUGUST 17-24. — **Ruislip-Northwood.** — MACHINERY.—The U.D.C. of Ruislip-Northwood invite tenders for the supply and fixing of machinery. Further particulars and form of tender may be obtained from Mr. H. Howard Humphreys, M.Inst.M.E., of 28, Victoria-street, Westminster, S.W. A deposit of 2l. 2s. will be required.

AUGUST 17-24. — **Ruislip-Northwood.** — PLANT.—The U.D.C. of Ruislip-Northwood invite tenders for the supply and fixing of plant at their Sewage Disposal Works, near Ruislip Common, Middlesex. Further particulars, etc., may be obtained from Mr. H. Howard Humphreys, M.Inst.M.E., of 28, Victoria-street, Westminster, S.W. A deposit of 2l. 2s. will be required.

AUGUST 17. — **Virginia Water.** — BRIDGE.—The U.D.C. of Egham invite tenders for rebuilding a brick bridge known as Waterloo Bridge, Virginia Water. Plans, etc., may be inspected at the Surveyor's Office (Mr. W. Menzies Englefield Green).

AUGUST 18.—**Portobello.**—RAILWAY.—The Niddrie and Benhar Coal Company, Ltd., invite tenders for the construction of about 210 chains of branch railway and sidings, including about 1400 cubic yds. of cutting embankment and ballasting. Mr. T. Robin Kerr, Secretary, Niddrie Collieries, Portobello.

AUGUST 18.—**Tralee.**—VIADUCT.—Tralee and Fenit Pier and Harbour Commissioners invite tenders for the construction of a reinforced concrete viaduct at Fenit Pier, Tralee, in accordance with the drawings, etc., of their Engineer, Mr. G. A. E. Hickson, M.Inst.C.E.I. Drawings, etc., can be obtained on application to the Engineer, at his office, 25, Denny-street, Tralee, on deposit of 1l. 1s.

AUGUST 24. — **Stretford.**—BOILERS, ETC.—Stretford U.D.C. Electricity Committee invite tenders for the following work in connexion with their electrical undertaking:—Contract No. 27.—Steam boilers and accessories. Contract No. 28.—Economisers and accessories. Contract No. 29.—Mechanical stokers. Forms of tender, etc., may be obtained from Mr. Geo. H. Abrahams, Clerk to the Council, Council Offices, Old Trafford, on payment of a deposit of 1l. 1s. in each case, and further information may be obtained from the consulting engineer, Mr. T. L. Miller, M.Inst.C.E. 19, Brazennose-street, Manchester.

AUGUST 26. — **Burnley.** — STEEL ROOF.—The Gas Committee of the Burnley Corporation invite tenders for the supply and erection of a steel roof for the new retort-house at the Gasworks. Specifications, etc., may be obtained on application to the Engineer, Mr. J. P. Leather, Gasworks, Burnley. The drawings may be inspected at the Gasworks, or, if desired, photo copies will be sent to intending contractors on receipt of 10s.

AUGUST. 26.—**Sutton-in-Ashfield.**—PUMPS.—The Sutton-in-Ashfield U.D.C. Water Committee invite tenders for supplying and fixing on their foundation one set of new treble-barrel pumps, with a coal-gas engine to work the same, complete. For any further particulars apply Mr. T. Robinson, Waterworks Offices, Sutton-in-Ashfield.

AUGUST 31. — **Greenock.** — WHARF. — Greenock Harbour Trustees invite tenders for the renewal of the Eastern portion of East India Wharf. Plans may be seen at the Engineer's Office, Municipal Buildings, and copy of the specification, etc., may be obtained from him on payment of 1l.

AUGUST 31.—**Sheffield.**—FOUNDATIONS, ETC.—The Electric Light Committee invite tenders for foundations for new boiler, ashes and dust chambers, pipe trenches, retaining walls, etc. Plans, etc., may be obtained from Mr. S. E. Fedden, General Manager and Engineer, Corporation Electric Supply Department, Commercial-street, Sheffield, on making a deposit of 1l. 1s. for each set.

AUGUST 31. — **Wrexham.** — GOODS YARD.—Great Western Railway Directors invite tenders for the construction of a new goods yard and sidings at Wrexham. Plans, etc., may be seen, and forms of tender, etc., obtained, at the office of the Resident Engineer at Birmingham (Snow Hill) Station.

SEPTEMBER 15.—**Leith.**—BRIDGES.—Leith B.C. invite tenders for the execution of the undermentioned works by a utilisation of the materials of the existing unfinished iron bridge over the Caledonian Railway Company's line at Victoria Park, viz.:—(1) The construction of a footbridge on the site of the bridge above referred to; and (2) a widening of junction bridge. Plans, etc., to be seen at the Burgh Surveyor's office, 35, Charlotte-street.

No DATE.—**London.**—FILTER, ETC.—Supply of fifty-chamber mash filter; double-plunger (or other suitable) pump for use therewith; wash charger of not less than 12,000 gallons capacity; lathe (slide, not screw-cutting), 8-in. (or near) centre, with gap (12 in. or 14 in.) in bed; drilling machine (power), capable of drilling up to 1 in. or 1¼ in.; steam engine (condensing) of about 100 I.H.P. Address, with full particulars, Unearth, care of Street's, 30, Cornhill, E.C.

No DATE.—**Newton Rigg.**—ENGINE.—Supply and erection of an 8 to 9 horse-power oil engine at Cumberland and Westmoreland Joint Dairy School and Farm, Newton Rigg, near Penrith. Full particulars may be obtained from the Manager, Newton Rigg Farm, near Penrith.

MISCELLANEOUS.

AUGUST 17.—**Dublin.**—SIGNAL ALTERATIONS.—Great Northern Railway Company (Ireland) Directors invite tenders for the alteration of the signalling at Navan Junction. Drawing, etc., at the office of Mr. W. H. Mills, Engineer-in-Chief, Amiens-street, Dublin, or copies of them at the office of the District Engineer, Belfast.

AUGUST 19. — **Orsett.** — STEAM ROLLING.—Orsett R.D.C. invite tenders for the supply on hire of two steam rollers. Particulars and form of tender can be obtained from the Council's Highway Surveyor, Mr. F. T. Johnson, 2, Orsett-road, Grays.

AUGUST 22.—**Mountmellick.**—NEW COOKING RANGE FOR INFIRMARY.—The Board of Guardians of the above Union invite tenders for supplying and fitting up a new range in the Infirmary kitchen. Specification, etc., may be obtained on application to Mr. Joseph Bannan, engineer, Maryborough.

AUGUST 22. — **Stafford.** — STREET-SWEEPERS.—The Corporation of Stafford invite tenders, illustrations, and details for horse-power automatic street-sweepers and loaders in one operation. Information can be obtained from Mr. William Blackshaw, Borough Engineer, Stafford.

AUGUST 24.—**Dartmouth.**—WAGON, ETC.—The B.C. invite offers for the supply of a covered motor, steam, or petrol dust wagon, or for a light traction engine and two trailers, suitable for the collection and haulage of house refuse. All particulars, etc., may be obtained on application to Mr. Thos. W. Joyce, F.G.S., A.M.Inst.M.E., Borough Engineer, Borough Engineer's Office, Victoria-road, Dartmouth, Devon, upon receipt of two stamps for postage.

AUGUST 24. — **Kingsclere.** — ROAD ROLLERS.—Kingsclere R.D.C. invite tenders for the hire of two 10-ton steam road rollers. Form of tender and particulars may be obtained at office of Mr. W. T. Jelfs, Surveyor, Kingsclere, Newbury.

AUGUST 25.—**Woodford.**—STEAM ROLLING.—Woodford U.D.C. invite tenders for the hire of steam rollers and scarifiers. Particulars may be obtained upon application to Mr. William Farrington, Surveyor to the Council, Council Offices, Woodford Green.

AUGUST 27.—**Manchester.**—CONVEYANCE OF OIL.—Manchester Corporation Gas Committee invite tenders for the conveyance of oil by motor wagons. General conditions of contract, etc., may be obtained on application (in writing only) to Mr. C. Nickson, Superintendent, Gas Department, Town Hall, Manchester.

SEPTEMBER 7.—**London.**—CREOSOTING.—Tenders for creosoting telegraph poles, General Post Office. Forms of tender may be obtained on application to Mr. G. Morgan, Controller of Stores, Stores Department, G.P.O., 17-19, Bedford-street, London, W.C.

No DATE. — **Harby.** — SINKING WELL.—Labour in sinking well 30 ft. deep, 4 ft. internal diameter, and 9 in. dry brickwork 5½ ft. over all, at Harby, near Doddington.

No DATE. — **Hipperholme.**—SCAVENGING.—Hipperholme U.D.C. invite tenders for the work of night-soil scavenging for twelve months. Conditions, etc., may be obtained at the Council Offices, Hipperholme.

PAINTING, etc.

AUGUST 17. — **Amersham.**—PAINTING.—Amersham Guardians invite tenders for painting the outside of a portion of the Workhouse Buildings at Amersham. Particulars may be obtained from Mr. R. H. Rushforth, Clerk to the Guardians, Amersham.

AUGUST 19. — **Leeds.** — PAINTING. — Painting the Monk Bridges, and also for painting the Globe-road Bridge, and the railings, girders, etc., in connexion with the widened portion of Water-lane Specifications may be seen, and forms of tender, etc., obtained, at the City Engineer's Office, on payment of a deposit of 1l. 1s.

AUGUST 19. — **Portsmouth.** — PAINTING.—Portsmouth Corporation invite tenders for painting a steel chimney shaft 200 ft. in height at the Electricity Works, Gunwharf-road, Portsmouth. Particulars from the Engineer and Manager, Electric Lighting Works, Gunwharf-road, Portsmouth.

AUGUST 20.—**Salford.**—PAINTING.—Exterior painting at the Ladywell Sanatorium. Specification, etc., may be obtained at the Borough Engineer's Office, Town Hall, Salford.

AUGUST 22.—**Bicester.**—PAINTING, ETC.—Bicester U.D.C. invite tenders for the painting of the inside and outside of the steel tanks at the Water Tower, and the lime washing and cement washing of the interior of the tanks, etc. Specifications, etc., may be obtained from Mr. R. Parker, Surveyor to the Council, Bicester.

AUGUST 24.—**Leeds.**—PAINTING.—Leeds Corporation invite tenders for painting at the Town Hall, Municipal Buildings, and Jewish Baths, Albert-grove. The specifications may be seen, and forms of tender, etc., obtained, at the City Engineer's Office, on payment of a deposit of 1l. 1s.

No DATE. — **Merioneth.** — PAINTING. — The Merioneth Education Committee invite tenders for painter's work required to be done at schools. The specification, etc., may be obtained on application to the architects, Messrs. Deakin & Howard Jones, M.S.A., Plas Ynys, Borth, R.S.O.

ROADS, SANITARY, AND WATER WORKS.

AUGUST 17.—**Dunham Massey.**—DETRITUS TANK.—Altrincham U.D.C. Sewage Farm Committee invite tenders for the construction of a detritus tank and screening chamber at their Sewage Disposal Works, Woodcote, Dunham Massey. Plans may be seen, and quantities, etc., obtained (on deposit of 1l. 1s.), on application to Mr. H. E. Brown, Surveyor, Town Hall, Altrincham.

AUGUST 17.—**Oakfield and Cwmbran.**—WATER MAIN.—The U.D.C. of Llanfrechfa Upper invite tenders for laying about 600 yds. of 5-in. water main between Llandowlais-street, Oakfield, and Abbey-road, Cwmbran. For further particulars apply to Mr. George Jones, Waterworks Superintendent, Richmond-road, Pontnewydd, Newport, Mon.

AUGUST 17. — **Prenton, Wirral.** — SEWER.—The R.D.C. of Wirral invite tenders for the construction of a sewer and appurtenant works in Storeton-road, in the Township of Prenton. The drawings, etc., may be seen at the office of the Engineer, Mr. Frank E. Priest, M.Inst.C.E., 13, Harrington-street, Liverpool, from whom copies of the specification, etc., may be obtained on deposit of 1l. 1s.

AUGUST 19. — **Devonport.** — BATH, ETC. — The Guardians invite tenders for supplying and fixing bath and fittings at the Parochial Offices, Camel's Head. For particulars apply at Parochial Offices, Camel's Head.

AUGUST 20. — **Morley.** — TAR MACADAM. — Morley Education Committee invite tenders for the providing and laying of about 1,060 super. yds. of tar macadam on the playground of their Queen-street Council School. Specifications, etc., may be obtained on application to Mr. W. E. Putman, A.M.Inst.C.E., Borough Engineer and Surveyor, Town Hall, Morley.

AUGUST 21.—**Skipton.**—COWLING SEWERAGE.—Skipton R.D.C. invite tenders for the construction of about 3,900 lin. yds. of 12-in., 9-in., 8-in., and 6-in. earthenware pipe sewers, with manholes, etc., also sewage tanks, continuous filters, pumping station, cast-iron rising main, and other works. Drawings, etc., may be seen and form of tender with quantities obtained, at the offices of the Engineer, Mr. H. A. Johnson, M.Inst.C.E., 15, The Exchange, Bradford; also at the offices of the Council's Surveyor, Mr. A. Rodwell, Gargrave-road, Skipton, on payment of a deposit of 2l. 2s.

AUGUST 24.—**Halifax.**—SEWERS.—The Highways Committee of the Halifax Corporation invite tenders for the construction of about 1,400 yds. of 15 in. and 12 in. diameter earthenware pipe sewers in Moor End-road, Mount Tabor-road, and Heath Hill-road. Plans, etc., may be seen, and forms of tender obtained, on application to Mr. James Lord, M.Inst.C.E., Borough Engineer, Town Hall, Halifax, upon payment of the sum of 1l.

AUGUST 24.—**Portsmouth.**—ASPHALT PAVEMENT.—Materials to be supplied and work to be performed in laying compressed or block asphalt pavement:—(1) In certain streets in the said Borough south of the railway; (2) in certain streets in the said Borough north of the railway. A copy of each specification, etc., may be obtained on application to Mr. Alexander Hellard, Town Clerk, Town Hall, Portsmouth, on payment of 2l. 2s.

AUGUST 24.—**Willesborough Lees.**—DRAINAGE WORKS.—East Ashford R.D.C. invite tenders for carrying out certain drainage works, etc., at the Isolation Hospital, Willesborough Lees. Plan can be seen by appointment at the Surveyor's Office Willesborough. Specification can be obtained on payment of a deposit of 10s.

AUGUST 25. — **Brighton.** — ROAD WORKS. — The Guardians invite tenders for the renovation of a portion of a road (known as Warren Farm-road) in the Parishes of Falmer and Ovingdean. Copy of specification, etc., may be obtained on application to Messrs. George Burstow & Sons, surveyors, 16, Gloucester-place, Brighton, Surveyors for the Guardians.

* AUGUST 31. — **Coventry.** — PAVING.—The Gas Committee of the Coventry Corporation invite tenders for paving 7,500 sq. yds. with 4-in. granite cubes. See advertisement in this issue for further particulars.

SEPTEMBER 1. — **Leatherhead.** — STREET WORKS.—The Leatherhead U.D.C. invite tenders for Belmont-road. The plans may be seen, and specification, etc., obtained, at the office of Mr. J. E. Smales, Surveyor, Council Offices, Leatherhead, upon payment of a deposit of 1l. 1s.

SEPTEMBER 1.—**Rochester and Strood.**—BINGHAM-ROAD, FRINDSBURY, IMPROVEMENT.—Tenders are invited for making-up, paving, and channelling the above-road. Plans, etc., can be seen, and forms of tender obtained, as to that portion within the city, at the City Surveyor's Office, Guildhall, Rochester, and as to that portion in the Rural District of Strood, at the office of the District Surveyor, Mr. L. Randerson, Blendon Villa, Meopham, near Gravesend

SEPTEMBER 4. — **Cork.**—WATERWORKS.—The County of Cork Joint Hospital Board invite tenders for the construction of waterworks for proposed sanatorium at Streamhill, Doneraile, Co. Cork, in accordance with plans, etc., prepared by Mr. Richard Evans, C.E., 53, South-mall, Cork, which may be inspected daily at the Engineer's Office. Quantities will be supplied on payment of 1l. 1s.

No DATE.—**Criccieth.**—ROADS AND SEWERS.—Construction of new roads and sewers of about 900 ft. in length on an estate at Criccieth. Full particulars may be obtained from Mr. G. Bovill, Estates Office, Rhydycreua, Bettws-y-Coed, North Wales.

STONE, MATERIALS, AND STORES.

AUGUST 18. — **Heywood.** — MATERIALS. — The Gas Committee invite tenders for the supply of tubes and fittings, sulphuric acid, and also for the purchase of surplus tar. Specification, etc., may be obtained upon application to Mr. W. Whatmough, Gas Manager.

AUGUST 19.—**Madras Port Trust.**—CEMENT.—Tenders are invited for the supply of 3,000 tons of Portland cement. Specification, etc., can be obtained from Messrs. Rendel & Robertson, 3, Great George-street, Westminster, S.W., on payment of 10s. (which will not be returned).

AUGUST 25.—**Nantwich.**—MATERIALS.—Nantwich U.D.C. invite tenders for supply and delivery of road materials. Mr. W. F. Newey, C.E., the Council's Surveyor.

AUGUST 25.—**Woodford.**—GRANITE.—Woodford U.D.C. invite tenders for the supply of broken granite. Mr. William Farrington, Surveyor to the Council, Council Offices, Woodford Green.

SEPTEMBER 1.—**Leatherhead.**—MATERIALS.—The Leatherhead U.D.C. invite tenders for the supply of materials and labour. Specification, etc., can be obtained at the office of Mr. J. E. Smales, Surveyor, Council Offices, Leatherhead.

SEPTEMBER 2.—**Littlehampton.**—FLINTS.—Littlehampton U.D.C. invite tenders for the supply and delivery of 500 cubic yds. of clean, hand-picked land flints. Forms of tender can be obtained of the Council's Surveyor, Mr. H. Howard, F.S.I., Town Offices, Littlehampton.

SEPTEMBER 5.—**Seaford.**—ROAD MATERIAL.—Seaford U.D.C. invite tenders for the supply of 550 tons of 1½-in. granite chippings and 170 tons of cracked flints. Forms of tender can be obtained from the Surveyor.

Auction Sale.

Nature and Place of Sale.	By whom Offered.	Date of Sale.
*DEALS, BATTENS, ETC.—Great Hall, Winchester House, Old Broad-street, E.C.	Churchill & Sims	Aug. 26

PATENTS.—*Continued from page 192.*

central space of the blocks, and for the channel surrounding the same, and rods extending through the channels which surround the several blocks; means for supporting the rods in such channels, and binding material filling the channels of, and serving to embed the rods there, are employed in combination.

7,315 of 1908.—P. VAN DE WINT and B. KAZEMIER: *Water-sealed Covers for Sanitary Closets.*

This relates to closets, and consists in providing the hinged seat with a lip or extension depending into a water seal formed round the top of the receptacle (or passage pipe); the lip or extension being likewise provided with a water gutter opening rearwardly into a box, a cover being arranged to dip into said gutter and run on rollers on the rim and bottom of the box, and being connected by a rod to the seat lid in such a manner that on raising the lid the cover is lifted free of the gutter and rolled in the box, whilst on raising the seat itself the lip or extension is lifted out of the channel, and the water runs into the closed rear end of the box.

23,891 of 1907.—F. SCHOFER: *Chimneys and Ventilating Devices.*

This relates to combined chimneys and ventilating flues, in which the outer and inner walls and connecting ribs of each block are formed in one piece, and consists in providing the connecting ribs with perforations, and forming the joints of the outer and inner walls where two blocks meet of a truncated pyramidal form, so that separate blocks are retained securely together without the sections of the outer or inner shafts being contracted.

24,150 of 1907.—S. SAUNDERS: *Ventilating Arrangements for Use with Heat Radiators.*

This relates to an air inlet and warming combination, comprising a fixed radiator, an air inlet valve, controlling means in connexion therewith, a groove or guiding and supporting frame fixed to the wall at the back of the radiator, so that a complete enclosed air-chamber on the wall is obtained; such frame being adapted to take support and enclose a slidable filter or screen capable of being removed without removing the radiator.

27,089 of 1907.—T. E. CARTER: *Window Sash-lifting and Locking Appliances.*

This relates to windows, comprising the combination of a toothed rack along the edge of the sash frame having an antifriction roller at each end thereof, a toothed pinion engaging with said rack and provided with a projecting spindle, to which a handle is attached, a sliding plate for locking said pinion in any desired position, together with antifriction rollers at the top and bottom of the other edge of the sash, provided with flat cowed springs.

27,920 of 1907.—THUMMELITWERKE ASBESTKUNST-SCHIEFER-FABRIK G-m-b-H.: *Manufacture of Tiles for Roofs and Walls.*

This relates to the manufacture of tiles for roofs and walls from mica, asbestos, and cement mixed with each other, characterised by the fact that the mixture of the said three ingredients is effected in a pulping machine, whereupon the mixture is formed into plates on pasteboard machines.

1,786 of 1908.—G. LANGLEY and A. SIMMONDS: *Hanging Sliding Window Sashes.*

This relates to windows of the kind in which the sashes are balanced one against the other, and consists in securing the cord or chain to a toothed rack or slide adjustable on the sash by means of a pinion and capable of being fixed in various positions on the sash by a bolt.

2,970 of 1908.—A. SCHOLL: *Regulating Apparatus for Steam-heating Installations Working at a Pressure Below that of the Atmosphere.*

This relates to steam-heating installations in which a pressure lower than that of the atmosphere is produced in the heating devices by means of an air-moving device provided with a liquid down pipe, and consists in a regulating apparatus in which by raising or lowering the lower end or the upper end of the down pipe the height of the column of liquid in the down pipe can be varied, and thereby the partial vacuum can be regulated, and in which the liquid down pipe is connected to the device for regulating the combustion in the boiler furnace in such a manner that the raising and lowering of the end of the liquid down pipe shall also adjust the combustion regulating device to the altered pressure.

3,503 of 1908.—P. HAAS: *Flushing Valves for Water-closets.*

This relates to a water-closet valve of the kind having a casing, a water inlet, a back-pressure chamber, a diaphragm valve arranged between the water inlet and the back-pressure chamber, and provided with a central aperture, a relief passage for the back-pressure chamber, and a relief valve controlling the relief passage; wherein a stem secured to the lift valve extends through the aperture in the diaphragm valve and forms a minute passage surrounding the stem, and connecting the water inlet with the back-pressure chamber, whereby the stem is moved relatively to the diaphragm when the relief valve is operated, and the diaphragm is moved relatively to the stem during the flushing operation, thus keeping the passage between the stem and the aperture in the diaphragm valve clear. An annular web extends from the valve seat to the casing wall to suport the diaphragm, and is provided with openings through which the water passes to the discharge passage when the valve is opened, and a movable stop within the casing is provided to engage the valve and limit its opening movement, and an adjustable stationary stop extending from the outside of the casing to the inside, and having a part to engage the movable stop; whereby the valve can be adjusted to regulate the duration of the flushing without opening the casing, and an auxiliary valve carried on the lift valve for closing the passage through the diaphragm from the inlet passage to the back-pressure chamber, and adapted to be brought into engagement with the central aperture of the diaphragm valve to close it and hold it set.

4,943 of 1908.—C. H. MOWER and the STURTEVANT ENGINEERING COMPANY, LTD.: *Apparatus for Heating and Circulating Air in Workshops and other Buildings.*

This relates to an apparatus for heating and circulating air in workshops and other rooms of the kind in which air propelled by a fan is passed in a downward direction over a heating coil enclosed in a casing; characterised in that air drawn down by a centrifugal fan from the upper part of the workshop or room in which the apparatus is placed over a heating coil, is discharged horizontally by said fan, so as to ensure positive distribution of the air over a wide area near to the floor.

8,431 of 1908.—J. B. ACKERMANN: *Sweeping Attachments for Floor Scrapers.*

This relates to the combination with floor scraper of a brush movably attached thereto, and means for automatically raising and lowering the brush as the scraper is reciprocated, and of means for limiting the upward movement of the brush and shoes connected to the brush, and frictionally engaging the wheels of the scraper to vertically adjust the brush, and a yoke pivoted at the axis of the wheels, and means for adjusting the brush toward and from said wheels; such adjusting means comprising bolts connecting the brush and yoke, and elastic washers surrounding said bolts.

10,272 of 1908.—L. STEIN: *Sheet-metal Roofing.*

This relates to sheet-metal roofs in which the sheets are employed, each of which is formed with an inverted U-shaped portion at one of its longitudinal sides, formed by first bending metal upwardly at an incline, then outwardly parallel with the body of the sheet, then downwardly at an incline, and finally in turning over the longitudinal edge of the sheet. The opposite longitudinal side edge of the sheet is bent upwardly at an incline, and turned over on its longitudinal edge. The part of one sheet enters in the space between the first and second inclines of the adjacent sheet, thus forming a perfect tight joint which freely admits expansion and contraction of the parts without disrupting such joint. The front portion of each of the front sheets is extended downwardly at an incline to the body of the sheet, and is then turned rearwardly to lie parallel with, but slightly spaced from the front portion. The rearwardly-turned part is extended rearwardly parallel to and spaced from the upper face of the sheet, and is then bent in U-shape to provide pockets for receiving the securing bars. These bars are made of steel, and of sufficient length to serve as connectors between the several sheets which are disposed transversely to the length of the latter. The adjacent sheets have their ends overlapping, which is made possible by forming the rear sheets with their pockets for the rod, to the rear of the front edge thereof.

SOME RECENT SALES OF PROPERTY:
ESTATE EXCHANGE REPORT.

July 9.—By SALTER, SIMPSON, & SONS (at Attleborough).	
Banham, Norfolk.—Farm, 54 a. 0 r. 29 p., f., p.	£1,350
Kenninghall, Norfolk.—Shop and five cottages, f., y.r. 32*l.*	225
July 13 and 14.—By GEO. NICHOLS, HOWES, YOUNG, ALDER, & Co. (at Yatton).	
Congresbury, Yatton, etc., Somerset.—The Brailkenridge estates, farms, holdings, accommodation lands, and building sites, 792 acres, f., y.r. 2,000*l.* (in 75 lots)	51,000
July 14.—By GEO. NICHOLS, HOWES, YOUNG, ALDER, & Co. (at Yatton).	
Brislington, Somerset.—"Winash," 29¼ acres, f., p.	4,400
"Woodcroft," f., p.	2,700
Building land, 14½ acres, f., p.	1,750
July 17.—By SALTER, SIMPSON, & SONS (at Diss).	
South Lopham, Norfolk.—Little Pantathorne Farm and accommodation land, 34½ acres, f., y.r. 42*l.*	815
Kenninghall, Norfolk.—The Heath and accommodation land, 28 acres, f., p.	395
North Lopham, Norfolk.—Farm, cottage, etc., 71½ acres, f., p.	1,410
July 24.—By SALTER, SIMPSON, & SONS (at Stalham).	
Catfield, Norfolk.—The White House Farm, 113½ acres, f., p.	3,200
The Cock Farm, etc., 83½ acres, f., p.	2,720
Hickling, Norfolk.—Arable and accommodation land, 19½ acres, f., p.	553
Catfield, Norfolk.—Four allotments and accommodation land, 56½ acres, f., p.	1,235
Waxham, Norfolk.—The Walnut Farm, 111 acres, f., p.	2,250
July 25.—By SALTER, SIMPSON, & SONS (at Norwich).	
Surlingham, Norfolk.—Hill House Estate, 208 acres, f., y. and e.r. 504*l.*	6,096
July 28.—By ALFRED PRESTON (at Ipswich).	
Kettleburgh, Suffolk.—The Brunswick Farm, 141 a. 3 r. 11 p., f., p.	1,725
July 29.—By ESCRITT & BARRELL (at Boston).	
Brothertoft, Lincoln.—The Hill Farm, 76 a. 3 r. 29 p., f., p.	4,100
By DICKINSON, RIGGALL, & DAVY (at Louth).	
South Reston, Lincoln.—Farmhouse, cottages, etc., 102 acres, f., p.	2,970
Strubby, Lincoln.—North Bottoms, Forman Crofts, etc., 136 acres, f., p.	2,720
Mablethorpe and Skidbrook, Lincoln.—Pasture land, 20½ acres, f., p.	680
Conisholme and Grainthorpe, Lincoln.—Arable and pasture land, 90½ acres, f., p.	2,250
North Somercotes, Lincoln.—Pasture and arable land, 86½ acres, f., p.	4,168
July 30.—By W. R. TOMPSETT (at Maidstone).	
Brenchley, Kent.—Rowden Farm, 50 acres, f., y.r. 100*l.*	2,300
By GEORGE HONE (at Winchcomb).	
Prescott, Gloucester.—Cottage and accommodation ground, 3½ acres, f., y.r. 12*l.*	270
By BIDWELL & SONS (at Ely).	
Lackenheath, Suffolk.—The Bedford Farm, 312 a. 2 r. 31 p., f., p.	3,460
July 31.—By R. DONKIN & SON (at Alnwick).	
Eglingham, Northumberland.—"Shipley Smallburns" and "Old Shipley" Farms, cottage, 110½ acres, f., y.r. 130*l.*	4,300
Alnwick, Northumberland.—"Watchburn Close," 7 acres, f., y.r. 2 *l.*	2,000

By BRACKETT & SONS (at Tunbridge Wells).

Tunbridge Wells, Kent. — 26, Lansdowne-rd, f., y.r. 80*l.*	£1,225
4, 5, 6, and 7, Mercer-st., f., w.r. 67*l.* 12*s.*	790

By H. F. RUSSELL & SON (at Leominster).

Kingsland, Hereford. — Shirlheath Farm, 118 acres, f. and c., y.r. 200*l.*	3,753

By STAFFORD & ROGERS (at Chelmsford).

Great Leighs, Essex.—Gubbions Hall Farm, 162½ acres, f., p.	2,068
Black Notley, Essex.—Maltings Farm, 119½ acres, f., p.	2,190

By RIPPON, BOSWELL, & WHITAKER,

Alphington, Devon.—Main-rd., four enclosures, 13 a. 0 r. 39 p., f., p.	275

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; p. for possession; e.r. for estimated rental; w.r. for weekly rental; q.r. for quarterly rental; y.r. for yearly rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; la. for lane; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; av. for avenue; gdns. for gardens; yd. for yard; gr. for grove; b.h. for beerhouse; p.h. for public-house; o. for offices; s. for shops; ct. for court.

PRICES CURRENT OF MATERIALS.

*** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

BRICKS, &c.

	£ s. d.	
Best Stocks	1 8 0	per 1000 alongside, in river.
Picked Stocks for Facings	2 10 0	" delivered.
Flettons	1 7 0	" at railway depôt.
Best Fareham Red	3 12 0	" " "
Best Red Pressed Ruabon Facing	5 0 0	" " "
Best Blue Pressed Staffordshire	3 15 0	" " "
Do. Bullnose	4 0 0	" " "
Best Stourbridge Fire Bricks	3 14 0	" " "
GLAZED BRICKS.		
Best White and Ivory Glazed Stretchers	10 7 6	" " "
Headers	9 17 6	" " "
Quoins, Bullnose, and Flats	13 17 6	" " "
Double Stretchers	15 17 6	" " "
Double Headers	12 17 6	" " "
One Side and two Ends	16 17 6	" " "
Two Sides and one End	17 17 6	" " "
Splays, Chamferred, Squints	15 10 0	" " "
Best Dipped Salt Glazed Stretchers	10 7 6	" " "
Headers	9 17 6	" " "
Quoins, Bullnose, and Flats	13 17 6	" " "
Double Stretchers	15 17 6	" " "
Double Headers	12 17 6	" " "
One Side and two Ends	16 17 6	" " "
Two Sides and one End	17 17 6	" " "
Splays, Chamferred, Squints	15 10 0	" " "
Second Quality White and Dipped Salt Glazed	1 5 0	per 1000 less than best.

	s. d.	
Thames and Pit Sand	6 6	per yard, delivered.
Thames Ballast	5 0	" "
Best Portland Cement	28 0	per ton, "
Best Ground Blue Lias Lime	19 0	" "

NOTE.—The cement or lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime ..... 11*s.* 6*d.* per yard, delivered.
Stourbridge Fireclay in sacks 27*s.* 0*d.* per ton at rly. dpt.

STONE.

	s. d.	
BATH STONE—delivered on road waggons, Paddington Depôt	1 6½	per ft. cube.
Do. do. delivered on road waggons, Nine Elms Depôt	1 8½	" "
PORTLAND STONE (20 ft. average)— Brown Whitbed, delivered on road waggons, Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf	2 1	" "
White Basebed, delivered on road waggons, Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf	2 2½	" "
Ancaster in blocks	1 10	per ft. cube, deld. rly. depôt.
Beer "	1 6	" "
Greenshill "	1 10	" "
Darley Dale in blocks	2 4	" "
Red Corsehill "	2 2	" "
Closeburn Red Freestone	2 0	" "
Red Mansfield "	2 4	" "

YORK STONE—*Robin Hood Quality.*

	s. d.	
Scappled random blocks	2 10	" "
6 in. sawn two sides landings to sizes (under 40 ft. super.)	2 3	per ft. super. "
6 in. rubbed two sides ditto, ditto	2 6	" "
3 in. sawn two sides slabs (random sizes)	0 11½	per ft. cube "
2 in. to 2½ in. sawn one side slabs (random sizes)	0 7½	" "
1½ in. to 2 in. ditto, ditto	0 6	" "

STONE (*continued*).

HARD YORK—	s. d.	
Scappled random blocks	3 0	per ft. cube, deld. rly. dept.
6 in. sawn two sides landings to sizes (under 40 ft. super.)	2 8	per ft. super. "
6 in. rubbed two sides ditto	3 0	" "
3 in. sawn two sides slabs (random sizes)	1 2	" "
2 in. self-faced random flags	0 5	" "

SLATES.

In. In.	£ s. d.	
20×10 best blue Bangor	13 2 6	per 1000 of 1200 at r.d.
20×12 " "	13 17 6	" "
20×10 first quality	13 0 0	" "
20×12 " "	13 15 0	" "
16×8 " "	7 5 0	" "
20×10 best blue Portmadoc	12 12 6	" "
16×8 " "	6 12 6	" "
20×10 best Eureka unfading green	15 17 6	" "
20×12 " "	18 7 6	" "
18×10 " "	13 5 0	" "
16×8 " "	10 5 0	" "
20×10 permanent green	11 12 6	" "
18×10 " "	9 12 6	" "
16×8 " "	6 12 6	" "

TILES.

	s. d.	
Best plain red roofing tiles	42 0	per 1000, at rly depôt
Hip and Valley tiles	3 7	per doz. "
Best Broseley tiles	50 0	per 1000 "
Do. Ornamental tiles	52 6	" "
Hip and Valley tiles	4 0	per doz. "
Best Ruabon red, brown, or brindled do. (Edwards)	57 6	per 1000 "
Do. Ornamental do.	60 0	" "
Hip tiles	4	per doz. "
Valley tiles	3 0	" "
Best Red or Mottled Staffordshire do. (Peakes)	51 9	per 1000 "
Do. Ornamental do.	54 6	" "
Hip tiles	4 1	per doz. "
Valley tiles	3 8	" "
Best "Rosemary" brand plain tiles	48 0	per 1000 "
Best Ornamental tiles	50 0	" "
Hip tiles	4 0	per doz. "
Valley tiles	3 8	" "
Best "Hartshill" brand plain tiles, sand-faced	50 0	per 1000 "
Do. pressed	47 6	" "
Do. Ornamental do.	50 0	" "
Hip tiles	4 0	per doz. "
Valley tiles	3 6	" "
Staffordshire (Hanley) Reds or Brindled tiles	42 6	per 1000 "
Hand-made sand-faced	45 0	" "
Hip tiles	4 0	per doz. "
Valley tiles	3 6	" "

WOOD.

BUILDING WOOD.	At per standard. £ s. d.	£ s. d.
Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in.	13 10 0	... 15 0 0
Deals: best 3 by 9	13 0 0	... 14 0 0
Battens: best 2½ in. by 7 in. and 8 in., and 3 in. by 7 in. and 8 in.	11 0 0	... 12 0 0
Battens: best 2½ by 6 and 3 by 6	0 10 0	less than 7 in. and 8 in.
Deals: seconds	1 0 0	less than best.
Battens: seconds	0 10 0	" "
2 in. by 4 in. and 2 in. by 6 in.	9 0 0	... 10 0 0
2 in. by 4½ in. and 3 in. by 5 in.	8 10 0	... 9 10 0
Foreign Sawn Boards— 1 in. and 1¼ in. by 7 in.	0 10 0	more than battens.
¾ in.	1 0 0	"
Fir timber: best middling Danzig or Memel (average specification)	At per load of 50 ft. 4 10 0	... 5 0 0
Seconds	4 0 0	... 4 10 0
Small timber (8 in. to 10 in.)	3 12 6	... 3 15 0
Small timber (6 in. to 8 in.)	3 0 0	... 3 10 0
Swedish balks	2 10 0	... 3 0 0
Pitch-pine timber (30 ft. average)	4 0 0	... 4 15 0

JOINERS' WOOD.	At per standard.	
White Sea: first yellow deals, 3 in. by 11 in.	24 0 0	... 25 0 0
3 in. by 9 in.	22 0 0	... 23 0 0
Battens, 2½ in. and 3 in. by 7 in.	16 10 0	... 18 0 0
Second yellow deals, 3 in. by 1 in.	18 10 0	... 20 0 0
" " 3 in. by 9 in.	17 10 0	... 19 0 0
Battens, 2½ in. and 3 in. by 7 in.	13 10 0	... 14 10 0
Third yellow deals, 3 in. by 11 in. and 9 in.	13 10 0	... 15 0 0
Battens, 2½ in. and 3 in. by 7 in.	11 0 0	... 12 0 0
Petersburg first yellow deals, 3 in. by 11 in.	21 0 0	... 22 10 0
Do. 3 in. by 9 in.	18 0 0	... 19 10 0
Battens	13 10 0	... 15 0 0
Second yellow deals, 3 in. by 11 in.	16 0 0	... 17 0 0
Do. 3 in. by 9 in.	14 10 0	... 16 0 0
Battens	11 0 0	... 12 10 0
Third yellow deals, 3 in. by 11 in.	13 0 0	... 14 0 0
Do. 3 in. by 9 in.	12 10 0	... 14 0 0
Battens	10 0 0	... 11 0 0
White Sea and Petersburg— First white deals, 3 in. by 11 in.	14 10 0	... 15 10 0
" " 3 in. by 9 in.	13 10 0	... 14 10 0
Battens	11 0 0	... 12 0 0
Second white deals, 3in. by 11 in.	13 10 0	... 14 10 0
" " 3 in. by 9 in.	12 10 0	... 13 10 0
Battens	10 0 0	... 11 0 0
Pitch-pine: deals	18 0 0	... 21 0 0
Under 2 in. thick extra	0 10 0	... 1 0 0
Yellow pine—First, regular sizes	44 0 0	upwards.
Oddments	32 0 0	"
Seconds, regular sizes	33 0 0	"
Oddments	28 0 0	"
Kauri Pine—Planks, per ft. cube	0 3 6	... 0 5 0
Danzig and Stettin Oak Logs— Large, per ft. cube	0 3 0	... 0 3 9
Small " "	0 2 6	... 0 2 6

WOOD (*continued*).

JOINERS' WOOD (*continued*)—	At per standard. £ s. d.	£ s. d.
Wainscot Oak Logs, per ft. cube	0 5 6	... 0 6 0
Dry Wainscot Oak, per ft. sup. as inch	0 0 8½	... 0 0 9½
¾ in. do. do	0 0 7	... —
Dry Mahogany—Honduras, Tabasco, per ft. super. as inch	0 0 9	... 0 1 0
Selected, Figury, per ft. super. as inch	0 1 6	... 0 2 6
Dry Walnut, American, per ft. super. as inch	0 0 10	... 0 1 0
Teak, per load	17 0 0	... 22 0 0
American Whitewood Planks, per ft. cube	0 4 0	... 0 5 0

Prepared Flooring, etc.—	Per square.	
1 in. by 7 in. yellow, planed and shot	0 13 6	... 0 17 0
1 in. by 7 in. yellow, planed and matched	0 14 0	... 0 18 0
1¼ in. by 7 in. yellow, planed and matched	0 16 0	... 1 0 0
1 in. by 7 in. white, planed and shot	0 12 0	... 0 14 6
1 in. by 7 in. white, planed and matched	0 12 6	... 0 15 0
1¼ in. by 7 in. white, planed and matched	0 15 0	... 0 16 6
¾ in. by 7 in. yellow, matched and beaded or V-jointed brds.	0 11 0	... 0 13 6
1 in. by 7 in. " "	0 14 0	... 0 18 0
¾ in. by 7 in. white "	0 10 0	... 0 11 6
1 in. by 7 in. " "	0 12 9	... 0 15 0

6 in. at 6d. to 9d. per square less than 7 in.

JOISTS, GIRDERS, &c.

	In London, or delivered Railway Vans, per ton. £ s. d.	£ s. d.
Rolled Steel Joists, ordinary sections	7 0 0	... 7 10 0
Compound Girders, ordinary sections	9 0 0	... 10 0 0
Steel Compound Stanchions	11 0 0	... 12 0 0
Angles, Tees, and Channels, ordinary sections	9 0 0	... 10 0 0
Flitch Plates	9 0 0	... 9 10 0
Cast Iron Columns and Stanchions including ordinary patterns	7 10 0	... 8 10 0

METALS.

IRON—	Per ton, in London. £ s. d.	£ s. d.
Common Bars	8 10 0	... 9 0 0
Staffordshire Crown Bars, good merchant quality	8 15 0	... 9 5 0
Staffordshire "Marked Bars"	10 10 0	... —
Mild Steel Bars	8 15 0	... 9 5 0
Hoop Iron, basis price	9 5 0	... 9 10 0
" " Galvanised	17 0 0	... —

(*And upwards, according to size and gauge.)

Sheet Iron Black— Ordinary sizes to 20 g.	9 15 0	... —
" " 24 g.	10 15 0	... —
" " 26 g.	12 5 0	... —
Sheet Iron, Galvanised, flat, ordinary quality— Ordinary sizes, 6 ft. by 2 ft. to 3 ft. to 20 g.	15 0 0	... —
Ordinary sizes to 22 g. and 24 g.	15 10 0	... —
" " 26 g.	16 10 0	... —
Sheet Iron, Galvanised, flat, best quality— Ordinary sizes to 20 g.	18 0 0	... —
" " 22 g. and 24 g.	18 10 0	... —
" " 26 g.	20 0 0	... —
Galvanised Corrugated Sheets— Ordinary sizes, 6 ft. to 8 ft. 20 g.	14 10 0	... —
" " 22 g. and 24 g.	14 15 0	... —
" " 26 g.	16 5 0	... —
Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. by 20 g. and thicker	12 0 0	... —
Best Soft Steel Sheets, 22 g. & 24 g.	13 0 0	... —
" " " 26 g.	15 0 0	... —
Cut Nails, 3 in. to 6 in. (Under 3 in., usual trade extras.)	10 10 0	... 11 0 0

LEAD, &c.	Per ton, in London £ s. d.	£ s. d.
LEAD—Sheet, English, 3lb. and up.	16 17 6	... —
Pipe in coils	16 17 6	... —
Soil pipe	19 7 6	... —
Compo pipe	20 7 6	... —
ZINC—Sheet— Vieille Montagne ton	27 5 0	... —
Silesian	27 0 0	... —
COPPER— Strong Sheet per lb.	0 1 0	... —
Thin "	0 1 1	... —
Copper nails "	0 0 10	... —
Copper wire "	0 0 10	... —
BRASS— Strong Sheet "	0 0 11	... —
Thin "	0 1 0	... —
TIN—English Ingots "	0 1 4½	... —
SOLDER—Plumbers' "	0 0 7	... —
Tinmen's "	0 0 9½	... —
Blowpipe "	0 0 11½	... —

ENGLISH SHEET GLASS IN CRATES OF STOCK SIZES

15 oz. thirds	2½d.	per ft. delivered.
" fourths	1½d.	" "
21 oz. thirds	3d.	" "
" fourths	2½d.	" "
26 oz. thirds	4d.	" "
" fourths	3d.	" "
32 oz. thirds	4½d.	" "
" fourths	4¼d.	" "
Fluted Sheet, 15 oz.	3½d.	" "
" 21 oz.	4½d.	" "

ENGLISH ROLLED PLATE IN CRATES OF STOCK SIZES.

¼ Hartley's	2½d.	per ft. delivered.
⅜ "	2¾d.	" "
½ "	2¼d.	" "
Figured, Oxford Rolled, and "Oceanic" Glass, white	3½d.	" "
" " tinted	5½d.	" "

OTHER GLASS—		
"Arctic" Glass, white	4d.	" "
" " tinted	5½d.	" "
" " ruby and opalescents	1*s.*	" "

OILS, &c.		£ s. d.
Raw Linseed Oil in pipes	per gallon	0 2 0
" " in barrels	"	0 2 1
" " in drums	"	0 2 3
Boiled " in pipes	"	0 2 2
" " in barrels	"	0 2 3
" " in drums	"	0 2 5
Turpentine in barrels	"	0 2 5
" in drums	"	0 2 8
Genuine Ground English White Lea	per ton	21 0 0
Red Lead, Dry	"	20 0 0
Best Linseed Oil Putty	per cwt.	0 7 0
Stockholm Tar	per barrel	1 12 0

VARNISHES, &c.	Per gallon. £ s. d.
Fine Pale Oak Varnish	0 8 0
Pale Copal Oak	0 10 6
Superfine Pale Elastic Oak	0 12 6
Fine Extra Hard Church Oak	0 10 0
Superfine Hard-drying Oak, for seats of Churches	0 14 6
Fine Elastic Carriage	0 12 0
Superfine Pale Elastic Carriage	0 16 0
Fine Pale Maple	0 16 0
Finest Pale Durable Copal	0 18 0
Extra Pale French Oil	1 1 0
Eggshell Flatting Varnish	0 18 0
White Copal Enamel	1 4 0
Extra Pale Paper	0 12 0
Best Japan Gold Size	0 10 6
Best Black Japan	0 16 0
Oak and Mahogany Stain	0 9 0
Brunswick Black	0 8 0
Berlin Black	0 16 0
Knotting	0 10 9
French and Brush Polish	0 10 6

TENDERS.

Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursday.* [N.B.—We cannot publish Tenders unless authenticated either by the architect or the building owner; and we cannot publish announcement of Tenders accepted unless the amount of the Tender is stated, nor any list in which the lowest Tender is under 100*l.*, unless in some exceptional cases and for special reasons.]

* Denotes *accepted.* † Denotes *provisionally accepted.*

ABERDARE.—For additions to vicarage, for the Rev. C. A. H. Green, M.A. Mr. J. W. Rodger, architect, 14, High-street, Cardiff. Quantities by architect:—

J. Morgan & Son	£828 12 0	T. W. Davies ..	£728 9 6
D. Rees	787 7 6	C. J. Staples ..	703 10 0
Blacker Bros. ..	740 3 6	G. Hallett, Cardiff*	703 0 0
Hatherley & Co.	737 16 5		

BECKENHAM.—For erecting a corrugated iron building to be used as an art school, for the Urban District Council. Mr. J. A. Angell, Surveyor:—

Humphreys, Ltd...	£2,817	Hawkins & Co.	£2,225
Norton Bros.....	2,800	British Iron Buildings	2,192
Ginger, Lee, & Co.	2,794	Harbrow	1,949
Harrison & Co....	2,264		

BECKENHAM.—For repairs, etc., at elementary schools, for the Urban District Council. Mr. J. A. Angell, Surveyor:—

G. Skinner.....	£80 6 0	Jones & Andrews	£50 0 0
Syme & Duncan	60 0 0	Brown & Son ..	46 8 0
H. Heathfield ..	56 0 0	J. Elliman, Beckenham*	44 18 6
A. Lawrence	51 15 0		
Crossley & Sons	51 0 0		

BECKENHAM.—For making-up Durham-avenue, Elm-road, and Scott's-avenue, for the Urban District Council. Mr. J. A. Angell, Surveyor to the Council:—

Elm-road and Scott's-avenue.

E. Iles	£1,654 11 0	Mowlem & Co., Westminster*	£1,428 0 0
Free & Sons..	1,566 13 7		
W. Pearce....	1,497 0 0		

Durham-avenue.

E. Iles	£1,118 12 0	Free & Sons, Maidenhead*	£1,081 1 5
Mowlem & Co.	1,090 0 0		
W. Pearce....	1,086 11 0		

BECKENHAM.—For alterations to the Technical Institute, Beckenham-road, for the Urban District Council. Mr. J. A. Angell, Surveyor to the Council:—

Hawkey & Oldman	£1,420	Crossley & Son	£1,186
B. E. Nightingale	1,400	F. Webster & Son..	1,138
F. & G. Foster	1,297	A. Sedcole	1,127
J. Elliman	1,296	Jones & Andrews, Beckenham*	1,125
J. & C. Bowyer....	1,234	R. A. Hough	1,123
F. W. Green	1,196		

BIRKENHEAD.—For alterations to scullery, and erection of four bedrooms at the Nurses' Home Union Workhouse. Messrs. E. Kirby & Sons, architects, 5, Cook-street, Liverpool:—

H. J. Potter	£683 0 0
H. & J. Satterthwaite	515 14 0
R. Costaine & Sons	498 0 0
G. P. Snape	498 0 0
Davies & Gaskell	498 0 0
J. Merritt, Adelphi-street, Birkenhead*	482 7 7
	482 8 4

BISHOP'S NYMPTON, NEWTOWN.—For water supply, general repairs, drainage, etc., to Council School, for the Devon County Education Committee. Mr. Percy Morris, Architect, 1, Richmond-road, Exeter:—

W. Sanders & Sons, South Molton* .. £207 3 3

BRAUNTON.—For ventilation, new water-closet, etc., at Council School, for the Devon County Education Committee. Mr. Percy Morris, Architect, 1, Richmond-road, Exeter:—

Isaac & Sons	£165 10 0
R. Slee & Sons, Braunton*	157 19 3

BROADSTONE.—For the erection of a house at Broadstone, for General MacGregor. Mr. Walter Andrew, architect, Parkstone, and 24, Lime-street, E.C.:—

Jones & Seaward	£1,895 0	McWilliam & Son	£1,674 0
Jenkins & Sons, Ltd.	1,827 0	Burt & Vick....	1,601 [illegible]
E. S. Griffin	1,700 0	A. & F. Wilson*	1,585 0

CARDIFF.—For erecting laboratory and art block, for the Canton Municipal Secondary School, for the Education Committee. Messrs. James & Morgan, FF.R.I.B.A., Charles-street-chambers, Cardiff. Quantities by architects:—

D. Davies & Sons..	£4,320	D. W. Davies	£3,775
J. Allan, Ltd.	4,072	G. Beames	3,745
Griffiths & Son	3,982	Knox & Wells	3,737
W. Thomas & Co...	3,895	F. Bond, 49, Beda-road, Canton, Cardiff*	3,545
Blacker Bros.....	3,855		
E. Turner & Sons..	3,835		
Maggs & Co.	3,800		

CARDIFF.—For constructing masonry wall and works of road-widening opposite Nazareth House, in North-road, for the Corporation:—

C. Davies, Cardiff* £1,004 17 2

CHELSFIELD AND FARNBOROUGH.—For erection of Chelsfield Green-street Green (Mixed) School, for the Kent Education Committee:—

W. Owen & Son, Farnborough* £1,454 10

CHESTERFIELD.—For erecting boundary walls, etc., at the cemetery, for Chesterfield and Tapton Burial Acts Joint Committee. Mr. Vincent Smith, Borough Surveyor, Chesterfield. Quantities by Borough Surveyor:—

H. Ashley	£340 0 0	J. Wright	£233 0 0
J. Madin	279 6 8	G. F. Kirk, Chesterfield* ..	207 0 0
Collis & Son	267 0 0		

COLERIDGE.—For alterations to offices, drainage, water supply, etc., to Council School, for the Devon County Education Committee. Mr. Percy Morris, Architect, 1, Richmond-road, Exeter:—

S. Ellis & Sons, North Tawton* £137 5

CWMAMAN (Aberdare).—For erecting a new school-room to accommodate 200, with vestries, etc., for the Trustees of the English Baptist Church. Mr. J. Llewellin Smith, architect, Aberdare:—

Phillips & Davies	£900 10 0	J. Morgan	£718 12 0
Jones Bros.....	737 10 0	J. Jones	680 0 0
A. John	732 16 6		

FERRYHILL.—For alterations and improvements to Hall property, Ferryhill Village, for the Parish Council:—

G. L. Salkeed	£350 10	J. W. Stephenson. Ferryhill Village*	£260 0
W. Wells	267 11		
T. Chapman & Sons	230 0		

FINCHLEY.—For extension to engine-room building, for the Urban District Council. Mr. Edward Calvert, Electrical Engineer, Electricity Works, Finchley, N.:—

A. E. Faulks, Loughborough* £964 1 8

FROSTERLEY.—For erecting a parish hall, for Mr. V. A. Rippon, J.P. Mr. W. Bedlington, architect, 23, Eldon-square, Newcastle-on-Tyne:—

Walton	£1,185 0 0	J. J. Reed, Crott-terrace, Frosterley, Co. Durham*	£824 12 0
Hopper & Peacock..	953 4 6	Westgarth....	814 8 0
Lister.....	850 0 0		

GILLINGHAM (Kent).—For painting, etc., at elementary schools in the Borough of Gillingham, Kent, for the Education Committee. Mr. J. L. Redfern, Surveyor, Borough Council Offices, Gillingham:—

Schedule A (Byron-road School).

W. T. Baldwin, Balmoral-road, Gillingham* £53 8 0

Schedule B (Barnsall-road School).

T. C. Bines, Napier-road, Gillingham* 65 0 0

Schedule C (Richmond-road School).

H. Hampshire, Canterbury-road, Gillingham* 39 0 0

Schedule D (Other Schools).

H. Hampshire, Canterbury-road, Gillingham* 63 4 0

GREAT TORRINGTON.—For new offices, etc., Council school, for Devon County Education Committee. Mr. Percy Morris, Architect, 1, Richmond-road, Exeter:—

T. Bowden	£175 0 0
H. Grant, Torrington*	162 10 0

GRIMSBY.—For heating of Town Hall (including two boilers). Mr. H. Gilbert Whyatt, A.M.Inst.C.E., Borough Engineer and Surveyor, Town Hall, Grimsby:—

T. T. Smith & Co.	£292 0 0	W. Cooper	£232 5 0
W. F. Spencer..	231 0 0	Braithwaite & Co.....	220 0 0
Unity Wood & Iron Co.....	262 18 0	Sharpe & Co. ..	215 11 0
Brightside Foundry and Engineering Co.....	257 0 0	Rosser & Russell	206 10 6
W. A. Baker & Co.	246 12 8	Seward & Co. ..	189 15 0
Dargue, Griffiths, & Co.....	238 0 0	D. J. Dolby, Grimsby*....	189 0 0
		R. Dawson & Co., Ltd.	137 0 0

HALE (Cheshire).—For surface water sewers, Ashley-road, Heath-road, etc., for the Urban District Council. Mr. S. A. Pickering, Surveyor, Council Offices, Ashley-road, Hale:—

Wellerman Bros., Hyde..... £699 16

HALE.—For making-up of Avon-road, Appleton-road, Belmont-road, Heath-road, etc., for the Urban District Council. Mr. S. A. Pickering, Surveyor, Hale:—

G. E. Ward, Cook, & Co., Liverpool.....	Appleton-road....	£586 19 10
	Avon-road	431 5 11
	Heath-road	433 15 4
	Warwick-road	432 2 1
	Prescot-road	317 3 4
	Belmont-road	674 11 4

HALE.—For surface water sewers, Park-road, etc., for the Urban District Council. Mr. S. A. Pickering, Surveyor, Council Offices, Hale:—

Wellerman Bros., Hyde..... £699 16

HASLINGDEN.—For subsidiary sewers, for the Town Council. Mr. J. Singleton Green, Borough Surveyor, Haslingden:—

H. E. Buckley, 107, Swan-arcade, Bradford £586 14 3

HONITON.—For alterations to hot-water supply at the Workhouse, for the Guardians. Mr. J. Ford, Engineer, Branscombe, Axminster:—

S. G. Otton	£96 10 0	W. Mickelburgh..	£69 0 0
Garton & King..	94 15 3	J. Streat	67 18 0
W. H. Otton....	75 9 6		

NARBOROUGH.—For laying out new cemetery, for the Parish Council. Messrs. Everard, Son, & Pick, engineers, 6, Millstone-lane, Leicester:—

C. Chamberlain	£1,050 0 0
H. A. Dix & Co.....	1,011 13 3
E. Fox	995 0 0
Haskard, Rudkin, & Beck.....	987 0 0
W. Lord	982 10 0
A. E. Palmer	964 7 4
A. Jewell	920 13 11
Stimpson & Rolliston, Leicester* ..	895 6 0

NEWARK.—Alterations to the Vicarage, Appleton Gate, Guildhall-street, for the Vicar and Churchwardens of the Newark Parish Church. Messrs. Sheppard & Lockton, architects, Bargate, Newark. Quantities by Messrs. C. Pearson Shaw & Son, Nottingham and Bingham:—

W. Smith.....	£571 10 0	G. Brown & Son	£499 15 0
F. W. Croosland	586 11 6	Wadsworth & Son*.....	499 5 0
C. Baines.....	559 0 0		
G. E Dobney ..	551 13 6		

[All of Newark.]

NEWBURY.—For the erection of a house at Newbury, Berkshire, for Mr. James Buchanan. Mr. Walter Andrew, architect, Parkstone, and 24, Lime-street, E.C.:—

Adey & Co.	£1,874 0	H. Elms	£1,480 0
Kingerlee & Sons	1,589 0	Houghton & Co.	1,395 0
T. Plumb	1,558 10	E. A. Bance....	1,295 0
G. Head	1,500 0	Hoskings Bros..	1,250 0
McCarthy E. Fitt	1,487 0	A. J. Chivers* ..	1,235 0

NEWTON ABBOT.—For erecting additional wards at the Joint Hospital, for the Isolation Hospital Committee. Mr. S. Segar, architect, Union-street, Newton Abbot:—

L. Bearne, Newton Abbott £1,231 19 9

NORTHAM, APPLEDORE.—For a new Council School, for Devon County Education Committee. Mr. Percy Morris, County Architect (Education), 1, Richmond-road, Exeter. Quantities by Mr. S. W. Haughton, 22, Courtenay-street, Plymouth:—

Johnson & Co.....	£3,706 5 10
Cock, Lamerton, & Cock, Ltd.....	3,773 7 4
W. E. Bennett.....	3,539 13 7
R. Wilkins & Son	3,517 0 0
R. Pollard & Co.....	3,516 8 5
E. Ellis & Son.....	3,431 15 5
R. Goss & Sons	3,311 11 8
G. B. Turpin	3,259 0 0
F. J. Stanbury	3,184 7 2
J. Paynter	3,168 1 8
F. J. Badcock	3,157 9 0
R. Pickett	3,054 17 8
A. N. Coles, Plymouth*.....	2,906 10 8

NORTHWICH.—For street works, Witton-street, for the Urban District Council. Mr. John Brooke, Surveyor to Council:—

S. Hutton	£865 18 8	J. Kennerley, Northwich*..	£770 15 4
Beanie & Thompson	784 11 4		

NORTHWOOD.—For making-up of Highfield-road, for Ruislip-Northwood Urban District Council. Mr. W. Louis Carr, Surveyor, Council Offices, Northwood:—

—	Contract No. 1.	Contract No. 2.	Contract No. 3.
	£ s. d.	£ s. d.	£ s. d.
T. Watson, jun.	616 19 7	235 3 10	84 3 5
Neave & Son	604 5 9	227 5 6	69 2 8
T. Free & Son.....	597 15 0	238 11 0	77 3 2
J. Trueman, Ltd. ..	588 0 0	214 0 0	78 0 0
W. T. Wilson	565 14 11	192 9 3	63 10 3
G. R. Mann.....	547 17 9	208 12 7	72 14 2
J. A. Ewart.....	544 12 8	190 5 0	64 10 11
F. G. Brummell	538 0 10	198 1 5	68 7 2
Langley & Johnson, Slough*	537 2 4	191 6 10	66 13 6

PARKSTONE.—For alterations and additions to "Huntly," Parkstone, for Colonel P. S. Druitt. Mr. Walter Andrew, architect, Parkstone, and 24, Lime-street, E.C.:—

J. Hillman	£449 3	Baker & Pearcy ..	£436 0
A. E. Rogers*	440 0	A. & F. Wilson....	430 0

PARKSTONE.—For alterations and additions to "Hillmorton," Parkstone, for Mr. W. S. Hogg. Mr. Walter Andrew, architect, Parkstone, and 24, Lime-street, E.C.:—

W. Southgate	£259
Baker & Pearcy*	197

RAMSBOTTOM (Lancs).—For construction of sewer along Carr-street and Tanners-street, for the Urban District Council. Messrs. J. Diggle & Son, engineers, Hind Hill-street, Heywood, Lancs., and at Westminster:—

W. Barrick, Manchester* £217

RAMSBOTTOM (Lancs.).—For alterations to bacterial filters at sewage disposal works, Summerseat (Contract No. 19), for the Urban District Council. Messrs. J. Diggle & Son, engineers, Hind Hill-street, Heywood, Lancs., and at Westminster:—

S. Johnson & Son, Salford*..... £1,383

READING.—For public convenience at junction of Southampton-street and Mount Pleasant, for the Corporation. Mr. J. Bowen, Borough Engineer and Surveyor, Town Hall, Reading:—

McC. E. Fitt, Oxford-road, Reading* £479

READING.—Accepted for private street improvement works in James-street and part of Brook-street West, and in Elgar-road, Hagley-road, and Audley-street, for the Corporation of Reading. Mr. J. Bowen, Borough Engineer and Surveyor, Town Hall, Reading :—

McC. E. Fitt, Oxford-road, Reading	£155 0 0	James-street.
	10 10 0	Brook-street West (part).
F. Talbot, Caversham-road, Reading	612 0 0	Elgar-road.
	199 15 0	Hagley-road.
	300 0 0	Audley-street.

RIPPONDEN.—For pulling down and rebuilding of Baitings Gate Bridge, for Rishworth Urban District Council. Messrs. R. Horsfall & Son, architects, Halifax :—

Sutcliffe Bros.	£415	J. & R. A. Crawshaw	£353
B. Riley	355		

RUISLIP.—For 1,148 yds. of pipe sewer for foul and surface water, raising roadway, etc., Sharp's-lane, for Ruislip-Northwood Urban District Council. Mr. W. Louis Carr, Surveyor, Council Offices, Northwood :—

T. Free & Son	£1,071 1 3	A. F. Lee	£946 0 0
Neave & Son	1,065 1 8	R. C. Brebner & Co.	913 14 7
J. A. Ewart	1,061 19 11	Langley & Johnson	906 14 3
T. Watson, jun.	1,058 5 7	F. G. Brummell	901 3 2
A. Macdonald	990 14 8	G. R. Mann, Edgware*	900 0 0
C. W. Killingbeck & Co.	977 18 0		
W. T. Wilson	968 12 0		
G. F. Raynor	965 4 4		

SHREWSBURY.—For reconstruction of sanitary fittings and plumbing at the Infirmary, for the Board of Directors, Salop Infirmary. Mr. J. W. Pearson, C.E., North-Eastern Sanitary Association, 9, Albert-square, Manchester. Quantities by engineer :—

J. Osborn	£935 0	A. Woodfull	£667 16 9
Mellowes & Co.	766 0	Woodcock & Riley	648 14 7
J. Clark	730 0	A. T. Marston & Co., Shrewsbury*	592 0 0
Scull Bros.	715 2		
McDonald & Hunt	710 10		
A. R. Knight	686 0		

SIDMOUTH JUNCTION.—For new sewers, etc., at Sidmouth Junction, in the Parish of Feniton, for the Honiton Rural District Council. Mr. J. Ford, engineer, Lower House, Branscombe, Axminster :—

		Weeks to do Work.
R. G. Spiller	£395	—
E. Harris, Clisthydon, Exeter*	180	6
Ellis & Sons	178	13

SOUTHALL.—For wrought-iron fencing and gates, Southall-park, for Southall-Norwood Urban District Council. Mr. R. Brown, Engineer and Surveyor, Public Offices, Southall, Middlesex :—

Fittings, Ltd.	£1,027 13 0
Castlake & Co.	996 8 0
A. W. Elwood	983 6 6
C. Hall	939 12 0
W. Brown & Son	938 19 0
Lockerbie & Wilkinson	919 10 0
Baylis, Jones, & Baylis	906 2 3
J. Priest & Son, Ltd.	866 6 5
W. Hayward & Sons, Ltd.	780 0 0
W. Gratrix & Sons	773 17 0
Wheeler Bros.	747 10 6
Hill & Smith	742 11 0
W. Miller & Sons	738 3 6
J. Elwell	705 14 0
W. J. Mullings, Bristol*	633 13 6

[Surveyor's estimate, £700.]

SOUTHEND-ON-SEA.—For alterations and additions to the conveniences at the Brewery-road school, for the Education Committee. Mr. E. J. Elford, Borough Engineer, Southend-on-Sea :—

F. Davey	£97 0 0	H. R. Hughes, Southend-on-Sea*	£61 10 0
F. & E. Davey, Ltd.	67 0 0		
E. Johnson	68 0 0		

SOUTH MOLTON.—For erecting class rooms at the United Schools. Mr. Alex Lauder, architect, Bridge-buildings, Barnstaple :—

E. Karslake	£1,810 19	W. Sanders & Son, 99, 100, & 101, East-street, South Molton*	£1,498 0
J. Bryant & Son	1,500 0		

TILBURY.—For the pulling down and removal of the existing wooden bridge from Ferry-road to the Council's Mortuary, Tilbury, and supply and erection of a new light road bridge of steel and ironwork, 35 ft. over all, for Orsett Rural District Council. Mr. S. A. Hill-Wills, engineer, 2, Orsett-road, Grays :—

H. J. Clarke	£175 0 0	E. Pavitt & Sons	£110 0 0
Wakeling & Lear	140 17 6	R. J. Mead, Little Thurrock*	84 10 0

TOTNES.—For erecting stand, paddock, offices, etc., for Totnes and Bridgetown Race Committee. Mr. W. F. Tollit, architect and surveyor, 10, High-street, Totnes :—

Reeves & Son, Totnes* £164

TWYNYRODYN.—For seven additional classrooms and cookery-room, cloakrooms, etc., at Council School, for Merthyr Tydfil Education Committee. Mr. J. Llewellin Smith, Architect :—

A. J. Colbourne, Swindon £8,683 16

TYNEMOUTH.—For construction of new streets at Rosehill, Wellington-on-Tyne, for the Rural District Council. Mr. J. Waters, Surveyor, Warden-place, Longbenton :—

G. C. Simpson, Newcastle £269 10

TYNEMOUTH.—For reconstruction of old streets, Rosehill, Wellington-on-Tyne, for the Rural District Council. Mr. J. Waters, Surveyor, Warden-place, Longbenton :—

G. C. Simpson, Newcastle £728 3 10

WALSALL.—For supplying and laying about 7,400 yds. of granite setts in Pleck-road, for Walsall Town Council. Mr. John Taylor, Borough Surveyor :—

G. P. Trentham† £4,050

WANDSWORTH. — For drainage works at the Infirmary, for the Guardians :—

J. West	£732 0 0	J. Garrett & Son	£420 0 0
G. S. Cook	675 0 0	E. Wall	404 0 0
E. Triggs	615 0 0	H. Bentham	392 0 0
Abbott & Charlton	612 1 3	J. A. Ewart	371 2 4
Ricks & Cushion	589 17 4	General Building Co.	359 10 0
F. J. Strutt & Co.	545 0 0	J. S. Selway & Co., 517, High-road, Chiswick*	230 0 0
T. Brown & Son	529 0 0		
G. Harber & Co.	482 15 6		
M. Calnan & Son	453 0 0		

WHITTINGTON. — For widening bridge over the River Whitting and cutting a new river course, for the Urban District Council. Mr. S. J. Laver, Surveyor, "Fernleigh," Old Whittington :—

H. Ashley	£490 0 0	J. Fidler, Ltd., Eckington*	£377 0 0
W. W. Bateman	409 7 6		

WILLAND. — For alterations to offices and new drainage, for the Devon County Education Committee. Mr. Percy Morris, Architect, 1, Richmond-road, Exeter :—

Wicks Bros., Bradninch* £163 15

WOKINGHAM.—For 350 yds. of surface water sewers, etc., for the Corporation. Mr. C. W. Marks, Borough Engineer and Surveyor, Town Hall, Wokingham :—

W. Reeves	£220 9 6
S. Lewis & Son	219 0 0
Collier & Cayley, Ltd., Vastern-road, Reading*	211 1 4

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Books.

Screens and Galleries in English Churches. By FRANCIS BOND, M.A., Hon. A.R.I.B.A. (Henry Frowde: London, New York, and Toronto. 1908.)

TO THOSE acquainted with Mr. Francis Bond's recently published "Gothic Architecture" another work from the same author will be of interest. The subject chosen by Mr. Bond is that of "Screens and Galleries in English Churches"; the illustrations alone make this little book a valuable contribution to ecclesiological records. For illustrative purposes, in these days of mechanical process reproduction, the camera is doing a real service in the field of archæological research. The value of these records, more especially as they become organised and collected where they are generally available, cannot be overestimated. There is, however, a danger attaching to the camera which threatens the individual architect or author who puts his trust in the multiplication of illustrations. If he is an architect he may lose himself in the vastness of the field before him, he may grasp the shadow for the substance, to find himself lacking either in structural knowledge or in that inspiration which comes from sympathy with the craftsman's point of view; if he is an author the number of illustrations is a temptation to prolixity tending to the multiplication of splendidly got up catalogues. Mr. Bond has avoided this latter danger and made an interesting book, showing much care in treating of the development of his subject and judgment in describing the splendid examples with which it is illustrated.

These examples are some of the choicest fruit of the later mediæval period, for it was around the sanctuary of the church that the craftsman spent himself. Here in a narrow compass are packed the thoughts and fancies, the beliefs and aspirations, of a great period in the national life. Unfortunately these memorials are without meaning for the rank and file to-day; they have for most of us only the sentimental interest attaching to their place in the *history* of art and in the development of the national church. To illuminate such a subject as this requires unusual combination of qualities, such qualities as Prof. Lethaby has shown in his "History of Mediæval Art," qualities some of which our time does not foster. Mr. Bond's book will appeal to the ecclesiologist rather than to the creative artist—the history is conveyed, but not the atmosphere; the development is shown, but not the art which produced the result. From the illustrative point of view the measured drawings and diagrams are unequal in quality to the rest of Mr. Bond's book; these are mostly the work of other hands, and the text suffers in consequence. The writer will reach the public, but will have no lasting effect upon the craftsman; yet it is the work which is sanctioned by the genuine craftsman which will last. There is probably no more certain way of getting into touch with old work than the making of accurate measured plans and sections of well-chosen examples. In this way we find that in the great periods of art, even in the most ornate, there is a surprising simplicity of structure, a simplicity which once understood appeals alike to the architect and engineer; in this way we can learn to appreciate the glorious effects obtained by laborious handwork, and the fancy—or, as we should say to-day, inspiration—arising from it, which so greatly delights the eye and ennobles old work. Such study conscientiously undertaken teaches the limitation attaching to working drawings and office-made designs; in old work we find the baffling factor which we cannot convey to paper in terms of measurement, the intangible quality of a work of art, which is the outcome of growth and life, which no rules or mechanical means can achieve.

The ideal record, and one which is being gradually adopted, is that of measured surveys accompanied by photographs; such a combination is, no doubt, immensely laborious, and is worthy of what it is to be feared it will never get in this country—national support. It is to be hoped that it will ultimately have the organised support of all the educational and prize-giving authorities throughout the country.

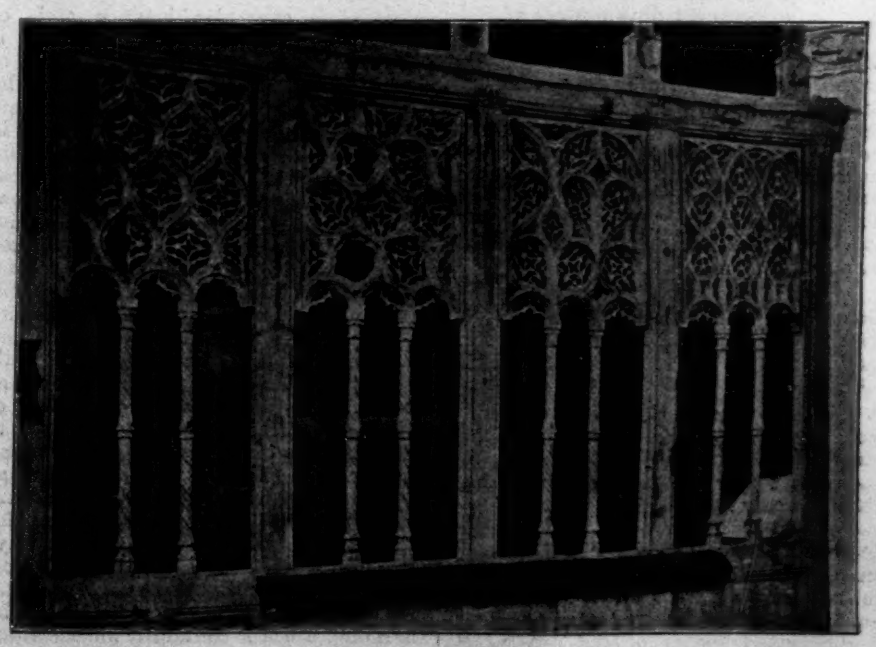
While lamenting the wanton destruction and vandalism which our churches have experienced, and unfortunately too often still experience, through the callousness or ignorance of the authorities, or the misdirected energies of the "practical man," it is astonishing what an immense amount of unspoiled work of the later Middle Ages is to be found in this country. The destruction of the screens in churches began with the Reformation, a period of fanaticism which every lover of the arts, at all events, must regard with feelings of the most lively regret.

Mr. Bond's first chapter deals with the "origin of screens." It is a little unfortunate that the author should take his readers' elementary knowledge of the subject so much for granted. To the uninformed this chapter, replete with scholarship, is neither very lucid nor enlightening. It would have been worth while devoting a short introduction to explain clearly the uses and meaning of the screen, the loft, and the rood, information only acquired step by step in subsequent sections. Briefly stated, the screen arose as a fence around the altar, the one essential part of the church, "Christ's Board," as it was called in Reformation days; in no country did these screens with their superstructures become more of a feature of the church than in ours. Prior to the Reformation the loft, or gallery, over the screen was surmounted with a great rood, consisting as a rule of the crucifix, supported on either hand by figures of the Virgin and St. John. On page 15 Mr. Bond writes—

> One must see such Devon churches as at Staverton, where not only the three screens are *in situ*, but the parapeted loft has been replaced; then restore in imagination, higher still, the great crucifix with its guardians, and one may realise something of the ancient magnificence of the approach to the holy places of these village churches of England.

In most cases the loft was removed with the rood; so strict was the order to remove the latter that not one now remains, although occasionally the beam was left, and more frequently the corbel stones which supported it. The form of the screens themselves, which were generally retained, show that they were designed for the superstructure. Mr. Bond describes the early screens found in Italian churches comparatively low structures, and traces the earliest type of screen in this country to Roman influence; this is natural enough, yet our mediæval screens would seem to owe more to Eastern than Italian forms.

The screen was primarily to prevent intrusion into the sanctuary; with the opening of the sanctuary to the view of the people it developed in architectural importance; the tiny chancel arch extended or disappeared; occasionally, as at Great Bardfield and Stebbing, illustrated on pages 29 and 31 respectively, it was incorporated with the screen in triple arches of stone. Stone screens are comparatively rare, and Mr. Bond shows that some have been superseded by those of oak. The best example is probably that at Bramford, of the XIVth century, illustrated on page 25. The stone screens were ill-adapted to supporting the rood and loft, and the former was frequently fixed above the apex of the chancel arch. The fine example at Totnes still shows something of its original colour decoration; like so many of the Devonshire screens, it extends right across the nave and aisles. That at Compton



Screen at Colebrook.

Carving at Bovey Tracey.

Bassett, page 35, is a beautiful instance in stone of the double planes of tracery, which is a distinguishing characteristic of East Anglian churches. It is rather curious that East Anglia, Devon, Somerset and Cornwall, should be richest in work of this class. But for the glorious colour decoration of the former there would be no difficulty in awarding the palm to the southern counties. The Devonshire screens show colour, many of them very richly decorated, but with little skill. The churches in Norfolk and Suffolk show more skill throughout, but they lack the charm and beauty of design of those of the south. They are more architectural, their motive is lithic, and therefore the result is not so happy. The chapter devoted to Welsh screens shows many beautiful examples more nearly allied to the Devonshire screens than to those of Norfolk.

In the majority of cases the date of these screens is XVth century. It is interesting to note that those of the Renaissance period show no foreign influence in their design, with a few noteworthy exceptions. Jacobean woodwork is always virile, and the best of it is naturally to be found inside the churches. When we look at the detailed photographs of Atherington, page 43, Mobberley, page 45, Bovey Tracey, page 62, and Kenton, page 106, we realise the richness of the field which Mr. Bond has traversed, and congratulate him on the choice of his subject. His method is one of singular thoroughness from the ecclesiological standpoint, and he has not altogether neglected the structure of the subject; on page 39 will be found some interesting matter on construction. A small collection of measured drawings are placed at the end of the volume; they are of a slight and inadequate character. Some large scale sections, particularly showing the contours of the great cornices of the Devonshire screens, and details of the tracery of those in East Anglia would add to the value of the work. In this connexion it may not be out of place to cite the illustrations contained in Mr. Geo. Jack's handbook on "Wood Carving," a model which it would be well for all students to have before them.

Enamelling: A Comparative Account of the Development and Practice of the Art. By Lewis F. Day. (London: B. T. Batsford.)

In this small book on the history and practice of one of the most fascinating of the minor arts, Mr. Day does not undertake to teach the reader the craft of enamelling, which can only be acquired in the workshop, and which he has not practised himself. He gives a historical summary of the history and development of the art, and of the methods and materials employed; besides usefully comparing and contrasting the effects of different branches of the art, which represent in fact different principles of working. As he says in his preface, no man ever did a thing the worse for knowing how others did it before him; and a knowledge of the methods of enamelling may be of value even to those who have no idea of practising it, by giving them a more intelligent enjoyment of the work of this class to be seen in art-museums.

Though the word enamel is used in a literary sense with various meanings (Milton even speaks of the grass as "the smooth enamelled green"), in the artistic vocabulary "enamel" stands only for "vitreous colour fused upon metal"; not, as the author points out, "glassy colour" or colour with a glassy surface, but glass with colour fused into it; a kind of parallel on a small scale with the "pot-metal" of stained glass glazing. The possibility of the art must have become apparent whenever it was first discovered that fused glass could be permanently fixed on a metal backing. It is hinted once by the author that the fusing of colouring material in the glass may have originated in the desire to find a cheaper substitute for the colours of precious stones; but we hardly think such a conclusion necessary. The fascination of being able to make colour at one's own choice would sufficiently account for an impetus given to the art, when once its possibility was realised.

How old is the art it seems difficult to say; but in its first richer developments enamelling is an essentially Byzantine art, ministering to the love of rich colour which possessed the Byzantine world, in the matter of architecture and dress as well as in decorative ornaments.

The close connexion between style of design and manufacturing difficulties is illustrated in the more orthodox forms of enamelled work, and is well brought out by the author. The use of the thin delicate metal divisions between different colours in the enamel, which has such a beautiful effect in cloisonné enamel, and is somewhat like the leading in a stained glass window, on a smaller scale, arose from the necessity of making a kind of fence for the fused enamel, which had a tendency to spread. Thus one of the most decorative details in the work arose from a practical difficulty in making. As to the origin of the champlevé process the author seems a little uncertain in his argument. He says that from the time of the Roman occupation of Britain we find vitreous colour fused to bronze, "the ornament scooped out and filled in with enamel;" that is, of course, champlevé enamel in a somewhat rude form. But Byzantine cloisonné work was for centuries the principal and representative form of enamel, as it is certainly the most beautiful; and we should take it that champlevé was redeveloped out of it, simply by the desire, which so constantly influences the later period of an art, to save labour: since the fused glass must have a matrix, it was easier to dig this out of the surface of the metal than to make pits by soldering on very thin ribbons of metal. It may have been also that the desire to produce larger pieces influenced the use of bronze, as a less valuable metal than gold; but gold cloisons could surely have been soldered on to a bronze base and produced the same outward effect as before. Champlevé is a save-trouble method. But the change influenced design again. Instead of the narrow line of the cloisons, a larger surface of the metal might be left at will, and receive its own engraved and chased decoration. It becomes like plate-tracery in architecture, only that the development is reversed. In architecture the continuous tracery followed and developed out of the plate-tracery; in enamel work the thin continuous tracery came first, and was abandoned for the plate-tracery of champlevé work; artistically an inferior effect; but both arising out of practical conditions of craft.

Champlevé, though commenced with the larger designs on copper, was of course not infrequently worked on a smaller scale in gold. One peculiar form of this is described by the author:—

"Jaipur enamel, for the most part in translucent ruby and emerald colours upon a white ground, is outlined with a fine gold line, which at first sight suggests cloisons. It is really champlevé in which very shallow cells for the enamel have been chased out of the solid, but exceptionally pure, soft, twenty-two-carat gold. The same thing was done in other parts of India."

The remark that "niello must not be confused with enamel" seems rather superfluous. It is as inferior an effect as possible, besides being colourless; and seems to have been generally used in a rather inferior and "pretty-pretty" type of design; it seems to tend to suggest thin lines and small and weak detail, instead of the colour-spaces of enamel.

"Basse-taille," "grisaille," and painted enamels are described and illustrated; of course none of the illustrations are in colour, which in a cheap publication for popular reading would have been impossible; but the black-and-white illustrations are a considerable assistance in explaining the character of the designs referred to.

The author, probably intentionally, does not say anything as to the productions of some contemporary English artists in the decoration of silver work—church plate, caskets, and table plate—with coloured enamel, in which as beautiful work has been done as is to be found anywhere. The object of his book is historical; but it will assist readers in appreciating both modern and ancient work in enamel. We recommend those who are about to visit large art-museums to read Mr. Day's book first, and go over the enamels with the book in their hands; it throws a very useful light on the study of this class of objects.

Scaffolding: A Treatise on the Design and Erection of Scaffolds, Gantries and Stagings. By A. G. H. Thatcher, Building Surveyor. Second Edition; revised. (London: B. T. Batsford.)

The first edition of this book appeared in 1904, and was reviewed at considerable length in our issue of June 11 of that year. As the author says in his preface to the second edition, recent alterations in and additions to the legal enactments affecting scaffolding and the persons employed in its erection have rendered this new edition necessary to bring the work up to date, and he has embodied in it the important series of suggestions for the guidance of those engaged in building operations published in the Annual Report of the Chief Inspector of Factories. The addition of this, and of the new provisions in the Workmen's Compensation Act, renders the book more generally useful to contractors, who thus have a memorandum at hand showing them what are their legal liabilities in connexion with the construction of scaffolding, and the work done on it.

Considering however that the second edition has been issued mainly in consequence of recent alterations in the law, we are surprised to find that the definition of a scaffold, which in our former review we pointed out as incomplete and somewhat misleading, still stands unaltered. We observed that in the eye of the law a scaffold need not consist of "combined timbers," as it had been decided that legally a single plank, which might be supported on a wall at each end, came within the definition of a scaffold; moreover that a scaffold, though usually of timbers, need not necessarily be so; a combination of T-iron, bolted up or otherwise secured, to carry a planking, would be equally a scaffold, both in a legal and in a constructive sense. We may repeat here what we then proposed as the proper definition of a scaffold:—

"A scaffold, as used in buildings and kindred work, is a temporary stand or stage of any material, consisting of one or more members, placed separately or in combination, and intended for the use of any workman or workmen employed on, in, or about a building, and when required, to afford facilities for lifting, lowering, carrying, or otherwise dealing with materials, tools, and appliances used on, in, or about a building."

That definition will cover the whole case of a scaffold as affected by law; Mr. Thatcher's will not.

There is another point on which we commented before; the description in the first paragraph of Chapter VIII., on the question of equilibrium, of the two forces which tend to create a loss of equilibrium in a scaffold, viz., the pressure of wind in a horizontal plane, and "the force of gravity due to the weight of the scaffold and that of attendant loads." The weight of the scaffold, unless it is erected out of plumb at first, has no tendency to destroy its equilibrium, nor have "attendant loads" unless either unequally distributed, or so great as to tend to crush the structure; an improbable case which may be disregarded. What ought to have been stated as the causes of loss of equilibrium should have been wind-pressure, uneven loading, or uneven strain from the haulage of materials on one side of the scaffold. The author's advice, however, to depend on triangular bracing as the bulwark against disturbance of equilibrium is of course perfectly sound.

In regard to the book as a whole, however, we may repeat our general summary of its merits, in our former review, as a reliable guide on a branch of construction which in the past has been left often too much in the hands of workmen, while, as the author remarked in the preface to the first edition, the architect, the builder, or the clerk of works, should in all cases be responsible for the method of erection of scaffolding. The book, with its varied information obviously the result of practical experience, may assist some of all three classes in fitting themselves for this responsibility.

The Baronial and Ecclesiastical Antiquities of Scotland. By R. W. Billings. Edited by A. W. Wiston Glynn, M.A. (Edinburgh: E. Saunders & Co. 1908. Parts I., II., III., IV.)

The republication of Billings's valuable and well-known work on the churches and castles of Scotland will bring it—at the moderate price of a shilling a part—within the reach of many who would be unable to purchase it in its original form. Four parts have now been published, and the whole will be completed with the issue of about another sixteen numbers. The plates have been reproduced by, we take it, a photographic process, the same size as the originals, and although in some cases there is evidence of some loss in the sharpness of line, which was inevitable, the play of light and shade which, together with accuracy in the architectural details, was a feature of Billings's plates has, in the majority of cases, been very well preserved. Some of the blocks in the text, however, are not so successful, partly owing to the surface of the paper on which they are printed. Among the buildings included are the imposing ruins of Aberbrothwick and St. Andrews, the cathedral churches of Brechin and Aberdeen, the smaller church of Corstorphine, and several castles. We hope, however, to notice the work more fully on its completion. It will undoubtedly make a very interesting volume.

The Abbeys of Great Britain. By H. Claiborne Dixon. (London: T. Werner Laurie. 1908.)

Bearing in mind the number of works on the subject generally, and on individual abbeys and churches in particular, the marked improvement in the local guidebook of recent years, and the papers too numerous to mention to be found in the proceedings of the various archæological societies, a work of this kind should, we think, have some special reason for its publication. In looking through the pages of this book there does not appear to be any evidence of original research, and there are inaccuracies that should be corrected.

"North ailses" are spoken of in connexion with the transepts at Glastonbury Abbey Church; the XIIIth century is blamed for the mutilation of a XIVth century effigy at Minster; and the opening words of the chapter devoted to Tewkesbury—"The ruins of this abbey church of a former Benedictine monastery stand overshadowed by the glorious Malvern Hills"—give a totally wrong idea of the condition and situation of the building. Tewkesbury Abbey Church is certainly anything but a ruin, and it can be stated with equal certainty that the shadows of the Malvern Hills, at least eight miles distant, have never reached it.

The full-page illustrations given of some of the buildings seem to be reproductions of wash drawings of average merit; the impression conveyed by most is that they have been copied from photographs, and to this possibly may be attributed one point in their favour—a general accuracy in the perspective, often distorted in illustrations of this class.

Towers and Spires: Their Design and Arrangement. By E. Tyrrell Green, M.A. (London: Wells, Gardner, Darton, & Co. 1908.)

As "a labour of love during the vacations of the past eight or ten years" the author must be credited with the enthusiasm that has led him to visit and draw the majority of the churches both described and illustrated in England and on the Continent. It does not, of course, pretend to be a technical book, but one of the class known as "popular," written by an amateur for others to whom the more technical books on the subject would be too advanced. The letterpress appears to have been carefully and accurately written; the illustrations are of average excellence; in the majority of cases they give evidence of much care, but many are spoiled by diagonal shading, which it is advisable in drawings of this kind to use only for the shadows, and with the lines running as nearly as possible parallel with the sun's rays, and not across them; and in others—such as the Bell Tower at Evesham, St. Mary at Taunton, and St. Nicholas, Newcastle—some indication of the surroundings, slightly but accurately drawn, is necessary to give scale. All who know the first-named will realise how much the beauty of the tower itself is enhanced by contrast with the spires of the neighbouring churches and by the charm of its natural surroundings. And the surrounding houses at Taunton, if not beautiful in themselves, serve to emphasise the height of the tower, the effect being entirely lost in the drawing given.

Supplementary Papers of the American School of Classical Studies in Rome. Vol. II. (The Macmillan Company. New York and London. 1908. Cloth, 11¼ in. by 9 in.)

The four papers in this volume are stated to be a selection from a considerable number. The first and third are on subjects too purely technical for notice here. The second, by C. Densmore Curtis, is on "Roman Monumental Arches," a good subject. The author's division of his material is good. The statement of measurement in each example is useful, and the various types of arch are adequately mentioned. The definition of Roman arches as primarily free-standing bases for statues is suggestive and possibly correct; but though the treatment of arch motives in design as inner and outer frames is true enough of some of the Eastern arches, it is an analysis which an architect would prefer to avoid in dealing with a stone treatment, and it is difficult to believe that the Romans consciously adopted it, certainly in their best arches. The illustrations (process blocks in the text) are well chosen, as they all represent lesser-known arches.

In an architectural sense, however, the subject is not quite adequately treated here. One is shortly convinced that it is not an architect who writes.

That might not matter, of course, but, as it is, the paper, which contains quite a good introduction, tends beyond that to become a mere catalogue; and, though useful material in a sense, the touch of arrogance in writing of architecture is irritating, and the faulty technical phraseology does not mend the matter. It is misleading to say, in speaking of the ends of the passageways, "the architrave was *bent* to form the archivolt"; one might as well say, in speaking of a dome, the walls are bent to form a ceiling.

And again, dealing with the arch at Carpentras, "The archivolt projects from the vaulting of the passageway, giving *an inner archivolt*"; for the words in italics here an architect would say, "a separate soffite."

There is a touch of real criticism here and there, as on p. 34:—"High and narrow niches are common in early arches, later the feeling was for horizontal lines," but the descriptions are bald throughout, and there is no attempt to note the real interest of the fragments described; as, for example, the original architectural form and Hittite feeling of reliefs at Carpentras; the nobility and Renaissance feeling of the medallions at Rimini; the forerunning of Renaissance work in many of the Eastern arches, notably Timgad, or of Florentine work at Alcantara. As to Benevento—perhaps the grandest arch in existence, it is relegated to a short paragraph, and the appreciation of its sculpture is lamentably deficient.

The fourth paper, "Inscriptions from Rome and Central Italy" (the title is stated inscriptions *of* Rome in one place and *from* in another), by James C. Egbert, contains some fair illustrations of inscriptions which, we gather generally, are given "either because they have hitherto been unpublished or because of some modification which should be made in the accepted readings." (See under heading "Capua and Vicinity," p. 280.)

Figures 19 and 37 show inscriptions with architectural settings, and Figures 21 and 41 show fine lettering.

Otherwise the paper is of interest archæologically, but need not be further noticed here.

MAGAZINES AND REVIEWS.

The *Quarterly Review* contains a very important article by Dr. Ashby, the Director of the British School at Rome, under the significant title, "The Rediscovery of Rome." The transference of the seat of government to Rome has had a great effect upon archæological discovery, partly in the increased disturbance of the ground for new buildings and street extension, partly also no doubt in forming an increased danger to archæological remains from the tendency to interfere with these in the carrying out of new lines of communication. As Dr. Ashby says, Rome and Constantinople are the only great capitals possessing *enceintes* in which their history is epitomised, and

every effort should be made to reconcile their preservation with the need of expansion of the modern city. Fortunately outside criticism has been very urgent on this point, and has checked some destruction which might otherwise have taken place. But in spite of these dangers from the action of local authorities, the new light thrown on the remains of Rome by recent investigation has been so great as almost to amount, in Dr. Ashby's phrase, to a "rediscovery." His article gives a short but comprehensive summary of the discoveries of recent years. But the possible field of research is still very large. The recent discovery in the Soane Museum of a hitherto unknown sketch-book of Roman subjects, of the XVIth century, suggests the advisability of the further examination of the contents of public and private libraries with the view of unearthing other old records in the shape of drawings showing (possibly) features which have now disappeared. The article in the *Quarterly* should be read by all who are interested in Roman archæology, the most vast and interesting chapter in archæology, since it deals with the city which was the meeting-place of the ancient and the modern world.

In the *Art-Journal* Mr. Gillies's article on "Netherlorn and its Neighbourhood," is continued, with Mr. Scott Rankin's illustrations; and No. 3 of Mr. Service's articles on "British Pottery." In the illustrations to the latter the authorship is in most cases assigned to a company instead of to the actual working craftsman, which is hardly right; especially when we read, in regard to Messrs. Doulton's "Rembrandt Ware" (why so named ?) that "the personality of the workman is represented in the finished object." Then why is he not credited with it by name ? A company cannot make a design, it must be the work of some one person; and Messrs. Doulton, we believe, have never been unwilling to give individual credit to the artists employed under them. How this is with the other firms whose output is illustrated we do not know. But we suggest that the author of the articles should endeavour to get the names of the actual artists.

The editorial article in the *Burlington Magazine* on "The Preservation of Ancient Buildings" is only a brief reference to Sir J. Stirling-Maxwell's suggestion, already noticed in our columns, for the formation of a permanent general Commission, and local County Commissions, to take under their official care the historic monuments which are in private ownership. The writer questions whether the maintenance of so large an official staff for the purpose is practically possible. Surely the office might be honorary, and involve no great expenditure of money. In regard to the National Gallery, it is now stated that the Director is still free, in cases of emergency, to purchase on his own responsibility, and that the statement to the contrary in a former issue was owing to a misunderstanding of the effect of Lord Rosebery's Treasury Minute; which is so far satisfactory. Mr. Roger Fry contributes a second article on the Illuminated Manuscripts at the Burlington Fine Arts Club, and Mr. G. F. Hill one on the Medallist Lysippus, a XVth century artist who worked in Rome; three sheets of illustrations of his medals are given. An interesting note is contributed by Mr. A. H. Maude on the extraordinary subject of the painted imitations of cracks in the plaster of the Sistine Chapel, to which Professor Herkomer had already called attention. Real cracks there are in abundance; but there are imitation cracks which, according to Mr. Maude's statement, there seems to be no doubt were painted in by Michelangelo. With what object ? Various suggestions have been made. Ours is, that Michelangelo, like some modern-mediæval architects in their drawings, did not like too *new* an appearance in his work, and did this to give it a look of age. But it is a poor trick to catch so great an artist in.

The *Architectural Record* (New York) has three articles of considerable interest. Mr. A. C. David, in commencing an article on "Innovations in the Street Architecture of Paris," observes that "to an American accustomed to the rapid and bewildering changes which take place in New York and Chicago, the comparative stability of a foreign city is very gratifying," and he seems to dread an interference with the stately architectural stability of Paris. But his illustrations, with the exception of one concrete house in Rue Franklin, show no prophecy of such a change, and he admits that he had difficulty in finding many revolutionary examples. The house in Rue Franklin is, however, a sad warning. If there is to be much of that kind of street front, the old architectural dignity and grace of the Paris streets will be gone; but we hope better things. An article on "German City Planning," translated from the German of Herr Gurlitt, contains interesting information in the way of plans, and seems written generally in deprecation of the modern symmetrical plan, as applied to old cities, and suggests that the Germans have on the whole been less guilty in this respect, and shown more regard for old street lines and houses, than has been shown in Paris or even in London improvements. Then there is a truly eloquent article by Mr. Bayard Taylor on a visit to Karnak, and the emotions inspired thereby. We quote a few words as to his first sight of the hall of the great temple:—

"I knew the dimensions of this hall beforehand; I knew the number and size of the pillars, but I was no more prepared for the reality than those will be who may read this account of it and afterward visit Karnak for themselves. It is the greatest good luck of travel that many things must be seen to be known. Nothing could have compensated for the loss of overwhelming confusion of awe, astonishment and delight which came upon me like a flood. I looked down an avenue of twelve pillars—six on each side—each of which was 36 ft. in circumference and nearly 80 ft. in height. Crushing as were these ponderous masses of sculptured stone, the spreading bell of the lotus blossoms which crowned them clothed them with an atmosphere of lightness and grace."

The *Berliner-Architekturwelt* contains an article, with a good many illustrations, on Berlin shop-fronts (*Schaufenster*). The buildings illustrated are the German Shipbuilding Exhibition of this year, and the Royal Gymnasium, Lankwitz; MM. Fritz & Wilhelm Hemmings, architects.

The *Nineteenth Century* contains an article by Mr. H. Heathcote Statham on "Art at the Franco-British Exhibition," a comparative criticism of the French and English exhibits of Sculpture, Painting, Architecture, and Applied Art. We may quote the following paragraph in regard to the contents of the Applied Arts Pavilions:—

"In the French pavilion the one quality which seems to be aimed at before anything else is what may be called movement of line—all things are twisted, convoluted, restless in outline and detail. This is an element of vulgarity, but it cannot be denied that there is a pervading quality of cleverness, of a certain 'go' about it. In the English pavilion we do not find this element of vulgarity; there is, in a sense, better taste, but unhappily the good taste is entirely of a negative order; the designs are absolutely dull and commonplace. They look as if they might have been designed by machinery, and that at all events cannot be said of the French work. The latter includes some finely modelled bronzes, too, replicas of statuary; and Barbédienne's miniature reproductions of the works of Barye, the great animal sculptor, are distinctly good. But the curious thing is that amid all this shop work there is one unpretending case, which no one looks at, containing purely artistic work of the highest class, exhibited by the French 'Administration des Monnaies et Médailles.' Let visitors to the French Applied Art pavilion look at this work, at the exquisite art displayed in the modelling of the medals by MM. Chaplain, Roty, Bottée, Cariat, and others of the French medal engravers—sculptors on a minute scale—work worth all the other exhibits in the room put together. The right place for such a collection would have been in the sculpture hall, not in a trade exhibition."

To the *Century* Mr. Robert Hichens (author of "The Garden of Allah") contributes an article on "The Spell of Egypt, as revealed in its Monuments," with coloured prints of Deir-el-Bahari and the Rameseum, from paintings by Jules Guérin.

Scribner, under "The Field of Art," publishes an article by Mr. Frank Fowler on "The Value of Art Effort," which commences with some very effusive comments on the effect of Monet's landscapes in opening the eyes of ordinary observers to the effect of light in landscape. The fact is that, so far from Monet being "a disciple of light," he lost the effect of light in his landscapes through the omission of shadow, by which alone the full effect of light can be realised. There are some good remarks further on in the article on the value of the study of painting in leading people to look more intelligently at Nature; but all this worship of Monet as an interpreter of nature is a fallacy, as will be ultimately recognised. Nature (fortunately) does *not* look like Monet's pictures.

The *Antiquary* contains an article on the achievements of "Flint Jack," a Yorkshire genius of the lower classes who in the middle of last century made a good trade by the manufacture of sham arrowheads and other imitations of pre-historic antiquities. He must have been a clever fellow, for his manufactured articles have an extraordinary look of the real thing, and it is believed that not a few of them still figure in museums as genuine antiquities. Mr. E. C. Vansittart contributes an interesting article on "A Corner of Old Rome" into which modern improvements have not penetrated.

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